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NASA TECHNICAL MEMORANDUM

NASA TM X-64751 Revision 2

THE OCTOBER 1973 SPACE SHUTTLE TRAFFIC MODEL

By Shuttle Utilization Planning Office Program Development

January 1974

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	Mission		LEON D. Al	JUEN, PU-PL	,
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TECHNICAL MEMORANDUM X-64751, Revision 2

THE OCTOBER 1973 SPACE SHUTTLE TRAFFIC MODEL

SUMMARY

Traffic model data for the Space Shuttle for calendar years 1980 through 1991 are presented along with some supporting and summary data. This model was developed from the 1973 NASA Payload Model, dated October 1973, and the NASA estimate of the 1973 Non-NASA/Non-DoD Payload Model. The estimates for the DoD flight included in this document are based on the 1971 DoD Mission Model.

This document is intended for NASA planning purposes only. The payload data in this document do not represent approved program information. The data were generated to help guide the development of an economical Space Transportation System (Space Shuttle and Tug) and the sortic payload carrier, the Spacelab. Low cost payloads which take advantage of the Space Shuttle's payload-oriented capabilities are assumed where cost effective. The low cost payload design effects and Shuttle assignments for DoD missions were provided by NASA and have not been approved by the Department of Defense.

INTRODUCTION

The evolution of a meaningful traffic model for the Space Shuttle necessarily includes the development of payloads which take advantage, both economically and scientifically, of the unique capabilities provided by the Space Shuttle. The data included in this document are derived from a "best mix" (based on lowest costs) of current design expendable, current reusable, and low cost payloads. Current design reusable payloads are current design payloads with additional hardware, where appropriate, for recovery and reuse. Low cost payload assumptions include not only payload reusability but many additional cost-saving concepts such as relaxation of weight and volume constraints, optimization of reliability and lifetime, standardization of subsystems and components, and design for maintainability.

The payload weight and dimensional data, as obtained from the various Program Office sources (as shown in the 1973 NASA Payload Model), generally

represent current design practice for expendable payloads. The weights reflected in this document take advantage of the low cost effects and, therefore, will not agree with the weights presented in the 1973 NASA Payload Model.

The payload launch schedules are presented in Tables 1 and 2. Table 3 lists each of the automated payloads flown in the manifests of Table 4. The dimensions, type of design, MMD, and the launch/retrieval schedule are shown for each payload. The flight manifests are shown for each year in Table 4. The Shuttle flight numbers listed in Table 4 do not represent a priority of flights or a sequence of flights for any given year. Table 5 is the manifest for those payloads launched on expendable launch vehicles during the buildup years of the Shuttle. Tables 6, 7, and 8 are the traffic summaries for the Shuttle, Tug, expendable launch vehicles, and the Spacelab. Table 9 is a further breakout of the sortie missions flown during the Shuttle era. All missions are 7 days, except those noted as 30 days in the Code column.

For this analysis, it was assumed that no payloads from the payload model would be flown on Shuttle flights during 1979. However, this does not represent a final NASA decision and it is possible that some payloads may be flown which do not interfere with the early Shuttle validation flights.

GROUND RULES

Payload Model

- The payload model for NASA Shuttle missions in the 1980-1991 period assumed an average NASA level budget of \$ 3.3B (1972 constant dollars).
- Analysis based on NASA/Non-NASA/Non-DoD payloads defined in the 1973 NASA Payload Model dated October 1973.
 - DoD Payload Model is August 1971 (updated), Option B.

Automated Payloads

- Program content for NASA payloads provided by NASA discipline offices.
- Foreign program content provided by NASA discipline offices and reviewed by the European Space Research Organization (ESRO).

- Non-NASA/Non-DoD program content synthesized from discipline office interpretation of current user planning.
- Payload designs and costing utilize data base resulting from LMSC, TRW, and Aerospace analysis.
- Redesign of payloads for shuttle utilization will neither degrade nor upgrade mission objectives.

Spacelab Payloads

- NASA Spacelab payloads derived from NASA/scientific community working groups and coordinated by the Joint User Requirements Group (JURG).
 - Foreign Spacelab missions provided by ESRO.
 - Thirty-day Spacelabs begin no earlier than CY-1983.
- Three Spacelab/Shuttle configurations considered for capture (lab only, lab/pallet, and pallet only).

Space Shuttle

- Configuration and capability consistent with latest Shuttle design concept (2 percent c.g. and 32 000 pound landing weight limit).
- Shuttle buildup rate: 14 flights in 1980, 36 flights in 1981, 50 flights in 1982.
 - IOC of Shuttle assumed late CY-1979.
 - Turnaround time on ground assumed to be 2 weeks per Shuttle.
- Shuttle reliability consistent with Aerospace Corporation ground rules used in 1971 Mission Model Analysis.

Space Tug

- Retrievable (interim) Tug IOC late CY-1980; full performance Tug with payload retrieval IOC late CY-1983.
 - Turnaround time on ground assumed to be same as Shuttle (2 weeks).
- Tug reliability consistent with Aerospace Corporation ground rules used in 1971 Mission Model Analysis.

Spacelab

- Spacelab developed by Europeans.
- Availability assumed at Shuttle IOC.
- Configuration and performance consistent with latest Spacelab design.
- Docking module required for Spacelab missions (except pallet only missions).
- Turnaround time on ground dependent on experiment complement and flight configuration.

Expendable Launch Vehicles

- For automated missions: Scout, TAT, Atlas/Centaur, Titan derivatives.
 - Direct operating costs reflect rate effects.

Launch Sites

- ETR available as required for entire time span.
- WTR available in late CY-1982.
- No polar launches from ETR.

Cost/Capture Analysis

- Low cost effects incorporated where applicable into payload designs for use for both the expendable launch vehicles and Shuttle cases.
- Capture analysis restrained by Shuttle and Tug delivery/retrieval capability, cargo volume, c.g. limit, landing weight limit, ground turnaround time, Shuttle overhaul, etc.
 - 1980 through 1991 time span assumed for analysis.
- Post-1991 (1992-1998) payload model synthesized to avoid program "tailoff."

- Payload multiples permitted in both Shuttle and expendable cases.
- DoD payloads not be combined with non-DoD payloads.
- Costs include reliability effects of vehicles, carriers, and payloads.
- All costs in 1972 constant dollars.
- Shuttle, Tug, and Spacelab developments, and unit and operations costs provided by program offices.

GLOSSARY

A-C Designation for first three missions

Adv. Advanced

Alt. Altitude

Appl. Application

Apo Apogee, high point of orbital altitude in nautical miles

Astr. Astronomy

Atm. Atmosphere

ATS Applications Technology Satellite

AU Astronomical Unit (mean distance from sun to earth)

Auto Automated

Bio. Biological

CDE, CE Current Design Expendable

CDR, CR Current Design Reusable

C/N Communications and Navigation

Code Refers to payload designation

Communications

Coop Cooperative

CPM Cargo Propulsion Module

CRL Crew rotation and logistics payloads

D-E Designation for fourth and fifth missions

Deg Degree

Dem, Demo Demonstration

Diam Diameter, refers to payload

DN Down

DoD Department of Defense

Dur. Duration

ECS Environmental Control System

Encke Comet

Energy Stage

Large propulsion stage which fits inside Shuttle Orbiter

Payload Bay

Env., Environ

Environment

EO

Earth observations

EOP, EOPAP

Earth and Ocean Physics Applications Program

EOS

Earth Observation Satellite

EOSO

Earth Orbiting Solar Observatory

Eq

Equatorial

ERTS

Earth Resources Technology Satellite

ESRO

European Space Research Organization

ETR

Eastern Test Range

Exp.

Expendable

Exper.

Experiment

Expos

Exposure

FLT

Flight

Flyby

Spacecraft studies target while passing through near

vicinity

Foc. X-Ray

Focusing X-Ray Telescope

Follow-on

Refers to subsequent flights for more detailed

investigations

 \mathbf{G}

Gemini

GEOS

Geodetic Satellite

Geosyn

Geosynchronous orbit

GPL

General Purpose Spacelab

Grav.

Gravitational

GRAVSAT

Gravitational Satellite

Halo

Lunar orbiting communication satellite

HEAO

High Energy Astronomy Observatory

Helioc., Helio.

Heliocentric

Helios

Solar mission

Ηi

High

Inc

Inclination, angular distance from the Equator in

degrees

Inject.

Injection

Interpl.

Interplanetary

Interstel.

Interstellar

IR

Infrared

I Tug

Interim Tug

Jup

Jupiter

KSC

Kennedy Space Center

 \mathbf{L}

Spacelab (Lab only)

Lab.

Laboratory

LCE

Low Cost Expendable

LCR

Low Cost Reusable

LAGEOS

Laser Geodynamic Satellite

L/D

Length/Diameter in feet

LEO

Low Earth Orbit

LNCH

Launch

L+P

Spacelab (Lab plus pailet)

LRO

Large Radio Observatory

LS

Life Sciences

LSO

Large Solar Observatory

LST

Large Space Telescope

Magnet.

Magnetic

Manifest

Results of payload capture analysis (based on lowest

total program costs)

Max.

Maximum, refers to maximum solar activity

MHD

Magnetohydrodynamics

1b

Pounds

Med.

Medium

Met., Meteor.

Meteorology

Mini

Small

MMD

Mean mission duration

Mod.

Module

Monit

Monitoring

N

New

NMI, n. mi.

Nautical miles

Nav.

Navigation

Nept., Nep.

Neptune

Nimbus

Meteorology satellite

NN/D

Non-NASA/Non-Dod

N-P

Refers to mission number

Obs

Observation

Observ.

Observatory

OMS

Orbital Maneuvering System

Oper.

Operational

Orbit

Altitude in nautical miles/inclination in degrees (both

apogee and perigee shown for elliptical orbit)

Orb

Orbiter

Р

Pallet, refers to Spacelab Pallet-only configuration

Per

Perigee, low point of orbital altitude in nautical miles

Perf

Performance

Pert., Perturb

Perturbation

PHY

Physics

P/L

Payload

PL, Pl

Planetary

Proc.

Processing

Proto.

Prototype

 \mathbf{R}

Refurbished

RCS

Reaction Control System

R&D

Research and Development

Rel.

Relativity

Rend

Rendezvous

Ret.

Return

Revisits

Rendezvous with orbiting spacecraft for maintenance

and data retrieval

Sat.

Satellite

Sat/Uran.

Saturn/Uranus

S/C

Spacecraft

SCI

Sciences

SEASAT

Seastate Satellite for ocean physics

SEOS

Synchronous Earth Observation Satellite

Sortie

Refers to payload carrier, Spacelab, Spacelab plus

Pallet, or Pallet only

 \mathbf{SP}

Space Processing

Sp

Space

S.S.

Space Station

ST

Space Technology

Stel

Stellar

Surf.

Surface

Syn.

Geosynchronous orbit

Syn. Eq.

Geosynchronous equatorial orbit (19,000 n. mi, 0 deg

inclination)

Sys

System

TAT

Thrust Augment Thor

Tech

Technology

Telesc.

Telescope

Tiros

Meteorology satellite

Trip

From Earth surface to Earth orbit (up)

Туре

Refers to payload technology level

U-Probe

Uranus probe

U.S.

United States

 $\mathbf{U}\mathbf{V}$

Ultraviolet

Varies

Refers to multiple payload destinations and/or

descriptions

Viking

Mars soft lander

WTR

Western Test Range

XI Tug

Expendable interim Tug

XUV

Extreme ultraviolet

Payload Code Definition

AST

Astronomy Program

PHY

Physics Program

PL

Planetary Exploration Program

LUN

Lunar Exploration Program

LS

Life Sciences Program

EO

Earth Observations Program

EOP

Earth and Ocean Physics Applications Program

C/N

Communications and Navigation Program

SP

Space Processing Program

ST

Space Technology Program

NN/D

Non-NASA/Non-DoD Payloads

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TABLE 1-A. PAYLOAD SUMMARY SCHEDULE (TOTAL)

	80	81	82	83	84	85	86	87	88	89	90	91	TOTAL
NASA AUTOMATED	17	22	13	15	17	20	23	21	15	18	21	19	221
NASA SORTIE	11	17	21	22	25	27	28	26	28	27	27	27	286
NASA TOTAL	28	39	34	37	42	47	51	47	43	45	48	46	507
NON-NASA AUTOMATED	T 8	10	9	10	8	T 9	12	6	19	9	17	8	125
NON-NASA SORTIE	2	3	3	4	3	5	5	5	5	5	5	5	50
NON-NASA TOTAL	10	13	. 12	14	11	14	17	11	24	14	22	13	175
								<u> </u>					
DOD	34	18	21	32	28	25	23	25	25	25	26	22	304
SUM TOTAL	72	70	67	83	81	86	91	83	92	84	96	81	986

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TABLE 1-B. PAYLOAD SUMMARY SCHEDULE (AUTOMATED)

NASA	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	TOTAL
ACTROMONAV	5	2	4	5	4	7	6	7	5	6	5	6	62
ASTRONOMY PHYSICS	2	3		2	3	1	2	3	4	3	4	4	32
PLANETARY	2	7	i i	3	4	5	5	2	Ô	2	2	2	34
LUNAR	Õ	Ó	ľ	ŏ	1	Ö	1 1	1	1	1	1	1	7
EARTH OBSERVATIONS	3	4	3	3	2	4	2	6	2	4	2	4	3:
EARTH AND OCEAN PHYSICS	2	4	2	ō	ō	i	4	ŏ	Õ	٥	4	0	1.
COMMUNICATIONS / NAVIGATION	ō	Ö	l ō	ŏ	Ö	٥	0	0	0	0	0	0	
LIFE SCIENCES	2	2	2	2	2	2	2	2	2	2	2	2	2
SPACE PROCESSING	ō	ō	0	ō	0	0	0	0	0	0	0	0	[
SPACE TECHNOLOGY	1	0	1 1	0	1	0	1	0	1	0	1	0	
TOTAL NASA	17	22	13	15	17	20	23	21	15	18	21	19	· 22
NON-NASA – NON-DOD													
COMMUNICATIONS / NAVIGATION	6	6	5	8	6	6	6	3	9	5	9	4	7
EARTH OBSERVATIONS	2	4	4	2	2	3	3	3	7	4	5	4	4
EARTH AND OCEAN PHYSICS	0	0	0	Ō	٥	0	3	0	-3	0] 3	0	l
TOTAL NON NASA	8	10	9	10	8	9	12	6	19	9	17	8	12
TOTAL DOD	34	18	21	32	28	25	23	25	25	25	26	22	3(
TOTAL AUTOMATED S / C	59	50	43	57	53	54	58	52	59	52	64	49	6

TABLE 1-C. PAYLOAD SUMMARY SCHEDULE (SORTIE)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	Total
NASA				<u> </u>									
Astronomy	1	2	3	4	5	7	7	6	6	6	5	6	58
Physics	1	2	3	3	5	5	6	5	6	5	6	5	52
Earth Observations	2	2	2	2	2	2	2	2	2	2	2	2	24
Space Processing	. 1	2	4	4	4	4	4	4	4	4	4	4	43
Earth and Ocean Physics	2	2	2	2	2	2	2	2	2	2	2	2	24
Communication & Navigation	0	1	1	1	1	1	-1	1	1	1	1	1	11
Life Science	2	2	2	2	2	2	2	2	3	3	3	3	28
Space Technology	2	4	4	4	4	4	4	4	4	4	4	4	46
Total	11	17	21	22	25	27	28	26	28	27	27	27	286
Non/NASA-Non/DoD												, .,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Space Manufacturing	0	0	0	0	0	1	2	1	2	1	2	1	10
Foreign Sortie	2	3	3	4	3	4	3	4	3	4	3	4	40
Total	2	3	3	4	3	5	5	5	5	5	5	5	50
Grand Total	13	20	24	26	28	32	33	31	33	32	32	32	336

TABLE 2-A. PAYLOAD SCHEDULE (ASTRONOMY PROGRAM)

Payload Code	Payload	CY	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	Total
,	Automated Spacecraft																					
AST-1	Explorers		2	1	2	1	1	2	1	2	1	1	2	1	2	1	2	1	1	1	1	26
AST-2	Orbiting Solar Obs.			1																		1
AST-3	Solar Physics Mission		٠					4		7.		t		<u>-</u>		F		<u>,</u>		→ f		7
AST-4	High Energy Astr. Obs. A-C						1	1	①	11	c′											4
	Large Observatories											D	L .			E ₁	D ₂		•		_E_2	
AST-5	High Energy Astr. Obs. D+E Revisits											£	1	<u>:</u> 	1	₹	1		2	_	} †	4 5
AST-6	Large Space Telescope Revisits									f	1	1	- 7 f	1	1	1	1	` → ; 	1	1	1	3 9
AST-7	Large Solar Obs. Revisits														•	1	1	1 1	1	1	1	1 6
AST-8	Large Radio Obs. Revisits					!							A		F	В	1	<u>:</u> 	1		— 1	1 3
AST-9	Focusing X-Ray Telesc. Revisits	L											f	1	1	f	4	1		1	}}}¹¹	3 4
	Total Autom.		2	2	2	1	2	4	2	5	2	4	5	4	7	6	7	5	6	5	6	77
	Sortie Payloads																					
AST-10	Stellar							•			1	2	2	3	4	5	3	4	3	3	3	33
AST-11	Solar									1	1	1	2	2	3	2	3	2	3	2	3.	25

Notes

Approved and Ongoing

TABLE 2-B. PAYLOAD SCHEDULE (PHYSICS PROGRAM)

Payload Code	Payload	CY	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	Total
	Automated Spacecraft							•											-			
PHY-1	Explorers		2	1	2	1	2	1	2	1	2	1	1	2	1	1	1	2	2	2	2	29
PHY-2	Grav. & Rel. Sat.									1			1			1					1	4
PHY-3	Environ. Perturb. Sat,										1			1			1			1		4
PHY-4	Helio. & Interstel. S/C	!																1				1
	Large Observatories																					:
PHY-5	Cosmic-Ray Laboratory Revisits							_									٠ ۴	1	1	1	1	1 4
	Total Autom.		2	1	2	1	2	1	2	2	3	1	2	3	1	2	3	4	3	4	4	43
	Sortie Payloads																					
РНҮ-6	High Energy Astrophysics									1	1	2	2	2	2	2	2	2	2	2	2	22
PHY-7	Atmospheric and Space Physics										1	1	1	3	3	4	3	4	3	4	3	30

Note:

O Approved and Ongoing

TABLE 6. PLANETARY EXPLORATION PROGRAM (PL)

Payload Code	Payload	CY	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	Total
PL-1 PL-2 PL-3 PL-4 PL-5	Approved Programs Mariner Venus/Mercury Pioneer Jupiter Flyby Helios Viking 75 Mariner Jup/Sat 77		**	1	②	①	2															1 0 2 2 2 2
PL-6 PL-7 PL-8 PL-9 PL-10 PL-11 PL-12 PL-13 PL-14	Inner Planets Viking Orbiter/Lander 79 Surface Sample Return Satellite Sample Return Pioneer Venus Inner Pl. Follow-On Venus Radar Mapper Venus Buoyant Station Mercury Orbiter Venus Large Lander							2	į	Į	2		1 2	2	2	1	2		2	1	1	1 2 2 2 2 5 2 2 2 2 2 2
PL-15 PL-16 PL-17 PL-18 PL-19 PL-20 PL-21 PL-22 PL-23	Outer Planets Mariner Jup/Uranus Flyby Pioneer Jup/Uranus Flyby (Uranus Probe) Pioneer Saturn Probe Pioneer Sat/Uranus Flyby (U Probe) Mariner Jupiter Orbiter Pioneer Jupiter Probe Mariner Saturn Orbiter Mariner Uranus/Nep Flyby Jupiter Sat. Orb/Lander								2 1	1	1 2			2	2	2				1	1	2 1 1 1 2 2 2 2 2
PL-24 PL-25 PL-26 PL-27 PL-28	Comets & Asteroids Dual Comet Flyby Encke Slow Flyby Encke Rendezvous Halley Flyby Asteroid Rendezvous			-		1			1		2				1	2						1 1 2 1 2
	Total		1	1	2	2	2	2	5	2	7	0	3	4	5	5	2	0	2	2	2	49

Note: Approved and Ongoing Launched

TABLE 2-D. PAYLOAD SCHEDULE (LUNAR EXPLORATION PROGRAM)

Payload Code	Payload	CY	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	Total
	Automated Spacecraft	<u> </u>												<u> </u>								
LUN-1	Lunar Polar Orbiter				:				1.													1
LUN-2	Lunar Orbiter					}								i		1						2
LUN-3	Lunar Rover																1	1				2
LUN-4	Lunar Halo																		1			1
LUN-5	Lunar Sample Return																			1	1	2
	Total								1					1		1	1	1	1	. 1	1	8
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TABLE 2-E. PAYLOAD SCHEDULE (LIFE SCIENCES PROGRAM)

Payload Code	Payload	CY	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	Total
	Automated Spacecraft														,,							
LS-1	Life Sciences Research Module						1		1	2	2	2	2	2	2	2	2	2	2	2	2	26
	Total Autom.		-				1		1	2	2	2	2	2	2	2	2	2	2	2	2	26
	Sortie Payloads									<u> </u>												1
LS-2	Laboratory and Carry-On Payloads									2	2	2	2	2	2	2	2	3	3	3	3	28
			••																	_		
}								•						-								ļ
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TABLE 2-F. PAYLOAD SCHEDULE (EARTH OBSERVATION PROGRAM)

Payload Code	Payload	CY	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	Total
	Automated Spacecraft																					
EO-1	Earth Resources Tech. Sat.					1																1
EO-2	NIMBUS			1		ĺ	1										ĺ				1	2
EO-3	Earth Observatory Sat.							1	1	1	1	ſ	1	1	2	1	1	1	1	1	1	- 15
EO-4	Syn. Earth Obs. Sat.	•								•	1		1		1		2		2		2	9
EO-5	Special Purpose Sat.					1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	19
EO-6	TIROS						1					1					1					3
EO-7	Syn. Meteorological Sat.		1	1				1									1					4
	Total Autom.		1	2		2	3	3	3	3	4	3	3	2	4	2	6	2	4	·2	4	53
·	Sortie Payloads														,							
EO-8	(Weather Simulation Lab., Sensor R&D)									2	2	2	2	2	2	2	2	2	2	2	2	24
	·												_									
																	ļ					
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Note:

Approved and Ongoing

TABLE 2-G. PAYLOAD SCHEDULE (EARTH AND OCEAN PHYSICS APPLICATION PROGRAM)

Payload Code	Payload	CY	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	Total
	Automated Spacecraft											,										
EOP-1	Geodetic Earth Orbiting Sat.	1		1																		1
EOP-2	Laser Geodynamic Sat.	!				1								l								1
EOP-3	SEASAT					}	1					1										2
EOP-4	GEOPAUSE								1			1									İ	2
EOP-5	Grav. Gradiometer									1												1
EOP-6	Mini-Laser Geodynamic Sat.	}								1					1			İ				2
EOP-7	GRAVSAT								1					ļ				ŀ				1
EOP-8	Vector Magnetometer Sat.					1					3					3				3		9
EOP-9	Magnetic Monitor Sat.										1		į			1	`.			1		3
	Total Autom.			1		1	1		2	2	4	2			1	4				4		22
	Sortie Payloads																					
EOP-10	(Earth and Ocean Dynamics Experiments)									2	2	2	2	2	2	2	2	2	2	2	2	24
																	.1					
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Notes:

Approved and Ongoing

TABLE 2-H. PAYLOAD SCHEDULE (COMMUNICATIONS AND NAVIGATION PROGRAM)

Payload Code	Payload	СУ	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	Total
1	Automated Spacecraft																					_
C/N-1	Applic. Tech. Sat.	1		1	į																	1
C/N-2	Coop. Applic. Sat.				1									•					٠			1
	Total			1	1	_						0		0	0	0	0	0		ı		2
CN/3	Sortie Payloads (Antenna Configurations Laser Technology, Traffic Management Techniques, Energy Transfer Experiment)										1	1	1	1	1	1	1	1	1	1	1	11

Note:

Approved and Ongoing

TABLE 2-I. PAYLOAD SCHEDULE (SPACE PROCESSING PROGRAM)

Payload Code	Payload	CY	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	Total
	Sortie Payloads																					
SP-1	(Crystal Growth, Biological Separation, Metallurgy)									1	2	4	4	4	4	4	4	4	4	4	4	43
							·									-					i	
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																	-					

TABLE 2-J PAYLOAD SCHEDULE (SPACE TECHNOLOGY PROGRAM)

Payload Code	Payload	CY	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	Total
i	Automated Spacecraft																					
ST-1	Long Duration Exposure Mod.									f .	}	-		1	,			 		—		6
	Total Autom.									1		1		1		1		1		1		6
ST-2	Sortie Payloads (Advanced Technology Lab, Fluid Physics, Gas Chemistry, Contamination Monitoring)									2	4	4	4	4	4	4	4	4	4	4	4	46
		:																				
]																						
<u> </u> 																						
					j																	

TABLE 2-K. PAYLOAD SUMMARY (NON-NASA/NON-DoD PAYLOADS)

Payload Code	Payload .	CY	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	Total
NN/D-1 NN/D-2 NN/D-3 NN/D-4 NN/D-5 NN/D-6	Comm/Nav International Comm. U.S. Domestic Disaster Warning Traffic Management Foreign Comm. Communication R&D/Prototype		3	1 7	2 3	1 1 2 2	1 1 3	1 4 3 1	2 1	3 1 2	2 1 2 1	2 1 1	2 4 1 1	3 1 1	2 1 1	2 2 1	2	6 1 1 1	2 2 1	3 2 1 1 1	2 1	30 43 4 17 23 3
NN/D-7 NN/D-8 NN/D-9 NN/D-10 NN/D-11 NN/D-12 NN/D-13	Earth Observations Tiros Operational Sat. Environ. Monitoring Sat. Foreign Syn. Met. Sat. (2 Systems) Geosyn. Oper. Environmental Sat. Earth Resources Sat. Low Earth Orbit (2 Systems) Geosynchronous Foreign Syn. Earth Obs. Sat.		1	1	1	1	1 1	1 1 1	1 1	1	1 1 1	1 1 · 1	1	1	1 1	1 1	1 1 1	1 1 1 2 1	1 1 2	1 1 2	1 1 1	7 9 7 13
NN/D-14	Earth and Ocean Physics Global Earth & Ocean Monit. Sys.															3		3		3		9
	Total Autom.		6	10	10	8	9	13	7	8	10	9	10	8	9	12	6	19	9	17	8	188
NN/D-15 NN/D-16	Sortie Payloads Space Manufacturing Foreign Sortie									2	3	3	4	3	1 4	2 3	1 4	2 3	1 4	2 3	1 4	10 40

TABLE 3-A. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (ASTRONOMY PROGRAM)

	LNCH SITE	1	· ·												
PLD CODE NO. PLD TYPE WEIGHT (LBS) LENGTH (FT)	ORBIT (ALT/INC) MMD (YRS)		-					YE	AR			<u> </u>			\dashv
DIAMETER (FT)	REFURBT (YRS)		80	81	82	83	84	85	86	87	88	89	90	91,	Ţ
AST-1A CDR	ETR 297/28.5	LNCH SCH	1	1	1	1	1	•	. 1	1	1	1	1	1	12
650 12.2 2.6	3 0 LOW EARTH	NEW REFURB RETRIEVED	0 1 1*	0 1 2*	0 1 1	0 1 0	1 0 0	1 0 0	1 0 0	0 1 1*	0 1 1*	0 1 1*	0 1 1*	0 1 1*	9
	ORBIT EXPLORER	ON-HAND ON-ORBIT	0 4	1 3	1 3	0 4	0 5	0 6	0 7	0 7	0 7	0 7	0 7	0 7	
AST-1B CDR	ETR 19323/28.5	LNCH SCH	1	0	0	1	0	1	0	1	0	0	0	0	4
650 12.2 2.6	3 0 SYN. ORBIT	NEW REFURB RETRIEVED	1* 0 0	0 0 0	0 0 0	1 0 0	0 0 1	0 1 0	0 0 1	0 1 0	0 0 0	0 0	0 0 0	0 0 0	2 2 2
	EXPLORER	ON-HAND ON-ORBIT	0	0 1	0 1	. 2	1 1	. 2	1	0 2	0 2	0 2	0	0	1
AST-3 CDR	ETR 270/30.0	LNCH SCH	1	0	1	0	1	0	1	0	1	0	1	0	6
4282 13.1 11.8	2 0 SOLAR PHYSICS	NEW REFURB RETRIEVED	0 1 1*	0 0	0 1 1*	0 0 0	0 1 1*	0	0 1 1*	0 0 0	0 1 1*	0 0 0	0 1 1*	0 0	0 6
`	SATELLITE	ON-HAND ON-ORBIT	0	0	0	0 1	0 1	0	0 1	0 1	0 1	0 1	0 1.	. 1	
AST-4 CDR	ETR 250/28.5	LNCH SCH	١ ،	0	D	0	0	0	0	0	0	0	0	0.	1
6064 18.1 9.0	4 0 HEAO	NEW REFURB RETRIEVED	1	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	. O O	0 0 0	0 0	0	0 1 1
		ON-HAND ON-ORBIT	0 3	0	. 3	3, 0	0	0	3 0	0 3	0 3.	0 3	3 0	0 3	
AST-5 CDR	ETR 200/28.5	LNCH SCH	0	0	1	0	0	0	1	1	0	0	0	1	- 4
17434 17.5 14.0	4 0 HEAO	NEW REFURB RETRIEVED	0	0 0	1 0 0	0 0 0	0	0 0	1 0 1	0 1 0	0	0 0 0	0 0 1	0 1 1	2 2 3
		ON-HAND ON-ORBIT	0	0	D 1.	0 1	0	0 1.	0 1	0 2	0 2	0 2	1 1	1	
AST-5V CDR	ETR 200/28.5	LNCH SCH	0	0	0	1	0	1	0	1	0	2	0	0	5
3500 5.0 14.0	0 REVISIT	NEW REFURB RETRIEVED	8	0 0 0	0 0 0	1 0 1	0 0 0	. 1 1	0 0 0	0 1 1	0 0 0	0 2 2	0 0 0	0 0	1 4 5
		ON-HAND ON-ORBIT	0	0	0	1 0.	1	1 0	. 1 . 0	1 0,	1 0	1 0	1 0	1 0	

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-A. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (ASTRONOMY PROGRAM) (CONTINUED)

PLO CODE NO. PLO TYPE	LNCH SITE		r					ΥI	AR						
WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	ORBIT (ALT/INC) MMD (YRS) REFURBT (YRS)		80	81	82	83	84	85	86	87	88	89	90	91	т
AST-6 CDR 20161	ETR 340/28.5 6	LNCH SCH	1	0	0	1 0	0	0	0	0	1	0	0	0	3 1
36.3 12.0	0 LST	REFURB RETRIEVED	ö	0	0	1.	0	ŏ	ő	0	1 1*	ŏ	0	0	2 2
		ON-HAND ON-ORBIT	0	0 1											
AST-6V CDR	ETR 340/28.5	LNCH SCH	0	1	1	0	1	1	1	1	0	7	1	1	9
3500 5.0 14.0	0 0 REVISIT	NEW REFURB RETRIEVED	0	1 0 1	0 1 1	0 0 0	0 1 1	0 1 1	0 1 1	0 1 1	0 0 0	0 1 1	0 1 1	0 1 / 1	1 8 9
		ON-HAND ON-ORBIT	0 0	1 0	1	1	1	1 0	1	1 0	1 0	1	1 0	1	
AST-7 CDR	ETR 190/28.5	LNCH SCH	0	0	0	0	0	1	0	0	0	0	0	3	1
27034 58.5 15.0	7 0 LARGE SOLAR	NEW REFURB RETAIEVED	0	0 0	0 0 0	0	0 0 0	1 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	1 0 0
	OPS.	ON-HAND ON-ORBIT	8	0	0 0	0	0	0	0	0	0 1	0	0 1	0 1	
AST-7V CDR	£†R 190/28.5	LNCH SCH	٥	0	0	0	a	0	1	1	1	1	1	1	6
3500 5.0 14.0	0 0 REVISIT	NEW REFURB RETRIEVED	0	0 0 0	0 0 0	0 0 0	0	0 0	1 0 1	0 1 1	0 1 1	0 1 1	0 1 1	0 1 1	1 5 6
		ON-HAND ON-ORBIT	0	0	0	0	0	0	1 0	1 0	1 0	1 0	1 0	1 0	
AST-8 CDR	ETR 38646/28.5	LNCH SCH	0	0	0	0	0	1	0	0	0	0	0	0	1
2786 25.0 10.0	7 0 LARGE RADIO	NEW REFURB RETRIEVED	0	0	0 0 0	0 0 0	0 0 0	1 0 0	0 0 0	0 0 0	0 0 0	0 0	0 0 0	0 0 0	1 0 0
	OBS.	ON-HAND ON-ORBIT	0	0	0	0	0	0 1	0	0 1	0 1	0	0	0	
AST-8V CDR	ETR 38646/28.5	LNCH SCH	0	0	0	0	0	0	0	1	0	1	0	1	3
3000 5.0 14.0	0 0 REVISIT	NEW REFURB RETRIÉVED	0	0 0	0	0 0 0	0 0	0 0 0	0 0	1 0 1	0 0 0	0 1 1	0 0 0	0 1 1	1 2 3
		ON-HAND ON-ORBIT	0	0	0	0	0	0	0	1 0	1	0	0	1	

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-A. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (ASTRONOMY PROGRAM) (CONCLUDED)

PLD CODE NO. PLD TYPE	LNCH SITE ORBIT (ALT/INC)							ΥE	AR						
WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	MMD (YRS) REFURB T (YRS)		80	81	82	83	84	85	86	87	88	89	90	91	т
AST-9A CDR 17434 17.5 14.0	ETR 270/28.5 4 0 FOCUSING X-RAY TELESCOPE—A	LNCH SCH NEW REFURB RETRIEVED ON-MAND ON-ORBIT	0 0 0	0 0 0 0	0 0 0	1 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0 1	0 0 1 1 0	0 0 0 1 0	0 0 0 1	0 0 0 0	1 0 1 0	1 1 1
AST-9AV CDR 3500 5.0 14.0	ETR 270/28.5 0 0 nevisit	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	0 0 0	0 0 0 0 0 0	0 0 0	1 1 0 1 1	1 0 1 1	0 0 0 0	0 0 0 0	0 0 0 0 1 0 0	0 0 0 0	0 0 0 0	0 0 0 0	2 1 1 2
AST-9B CDR 24136 52.5 14.0	ETR 270/28.5 5 0 FOCUSING X-RAY TELESCOPE—B	ENCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	0 0 0	0 0 0 0	0 0 0	0 0 0 0	0 0 0	1 1 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 1	1 1 0 1
AST-9BV CDR 3500 5.0 14.0	ETH 270/28.5 0 0 REVISIT	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	1 1 0 1	0 0 0 0	1 0 1 1 0	0 0 0 1 0	1 1 2

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-B. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (PHYSICS PROGRAM)

	1		1												
PLD CODE NO. PLD TYPE WEIGHT (L8S) LENGTH (FT)	LNCH SITE ORBIT (ALT/INC) MMD (YRS)		<u> </u>	··				YI	EAR						
DIAMETER (FT)	REFURB T (YRS)		80	81	82	83	84	86	86	87	BB	89	90	91	7
PHY-1A CDR 1588 13.3 4.0	WTR 1900/90.0 1 0 EXPLORER-UPPER ATMOSPHERE	NEW REFURB RETRIEVED ON-HAND	0	1 1* 0 0	0 0 0	0	1 0 1 1*	0	0	0 0 0	1 1 0 0	1 0 1	0 1 1 1 1 1	1 0 1 1*	6 2 4 4
		ON-ORBIT	0 4	5	0 5	0 5	0 5	0 5	0 5	0 5	0* 6	6	0 6	0 6	
PHY-18 CDR 853 12.8 5.0	ETR 20000/28.5 1 0 EXPLORER-MED. ALTITUDE	NEW REFURB RETRIEVED	0 000	1 0 0	0 0 0	0 0 0	1 0 1 1*	0	0	0	1 0 0	1 0 1 1*	1 0 1 1*	1 0 1	6 2 4 4
	A2111002	ON-HAND ON-ORBIT	0	0 2	0 2	0 2	0 2	0 2	0 2	0 2	0°	0 3	0	0	
PHY-1C LCE	ETR ESC/ .0	LNCH SCH	1	0	1	1	0	1	1	1	0	0	0	0	6
1226 10.4 6.1	3 0 EXPLORER-HIGH ALTITUDE	NEW REFURB RETRIEVED	1* 0 0	0 0 0	1 0 0	1 0 0	0 0 0	1 0 0	1 0 0	1 0 0	0 0 0	0	0 0	0 0 0	6 0 0
ė	1	ON-HAND ON-ORBIT	0	0	0 2	3	0 3	0 4	0 5	0 6	0 6	0 6	0 6	0 6	
PHY-2A LCE	WTR 100/90.0	LNCH SCH	1	0	0	1	0	0	0	0	0	0	0	0	2
2514 13.6 12.5	1 0 GRAV. & REL. SATA	NEW REFURB RETRIEVED	1* 0 0	0 0 0	0 0 0	1 0 0	0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0	2 0 0
		ON-MAND ON-ORBIT	0 1	0 1	0	0 2	0 2	0 2	0 2	0 2	0 2	0 2	0 2	0 2	
PHY-2B LCE	ETR 1AU/28.5	LNCH SCH	0	0	0	0	0	0	1	O	0	0	0	1	2
1373 12.0 9.3	2 0 GRAV. & REL. SAT.—B	NEW REFURB RETRIEVED	0	0 0	0 0 0	0 0	0 0	0 0 0	1 0 0	0 0 0	0 0 0	0 0 0	0 0 0	1 0 0	2 0 0
		ON-HAND ON-ORBIT	0	0	0	0	0	0	0 1	0 1	0 1	0 1	0 1	0 2	
PHY-3A CDR	ETR 6900/65.0	LNCH SCH	0	1	0	0	1	0	0	0	0	0	0	Ö	2
3846 15.8 7.0	3 0 ENVIRON, PERTURB, SAT.—A	NEW REFURB RETRIEVED	0	1 0 0	0 0 0	0 0 0	0 1 1*	0 0 0	0 0	0 0 0	0 0 0	0 0 0	0 0 0	0	1 1 1
	VA 11-A	ON-HAND ON-ORBIT	0	0	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0	

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-B. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (PHYSICS PROGRAM) (CONCLUDED)

PLD CODE NO. PLD TYPE	LNCH SITE ORBIT (ALT/INC)	-						ΥE	AR						
WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	MMD (YRS) REFURBT (YRS)		80	81 [′]	82	83	84	85	86	87	88	89	90	91	т
PHY-38 CDR 9845 17.3 10.0	ETR 1900/55.0 3 0 ENVIRON. PERTURB. SATB	NEW REFURB RETRIEVED ON-HAND	0 0 0	0 0	0 0 0	0	0 0 0	0 0 0	0	1 0 0	0 0 0	0 0 0	1 0 1 1*	0	1 1 1
PHY-4	ETR	ON-ORBIT	0	0	0	0	0	0	0	0	1	0	0	0	1
CDE 635 10.5 10.0	ESC/28.5 7 0 HELIO & INTERSTEL. S/C	NEW REFURB RETRIEVED	0	0 0 0	0 0 0	0 0 0	0 0	0 0 0	0 0 0	0 0 0	1 0 0	0 0 0	0 0	0	1 0 0
	3/0	ON-HAND ON-ORBIT	8	0	0	0 0	0	0	0 0	0	0	1	1	0 1	
PHY-5 CDR 46758 43.5 14.0	ETR 200/28.5 5 0 COSMIC RAY LAB.	LNCH SCH NEW` REFURB RETRIEVED	0 0 0	0	0	0	0 0 0	0 0 0	0 0 0	1 0 0	0 0 0	0	0 0 0	0 0 0	1 0 0
		ON-HAND ON-ORBIT	00	0	0	0	0	0 0	0 0	0 1	0 1	0 1	0 1	0 1	
PHY-5V CDR 3500 5.0 14.0	ETR 200/28,5 0 0 REVISIT	LNCH SCH NEW REFURB RETRIEVED	0 0	0 0 0	0 0 0	0 0 0	0	0 0	0	0	1 0 1	1 0 1 1	1 0 1 1	1 0 1	1 3 4
	1	ON-HAND ON-ORBIT	0	0	0	0	0	0	0	0	1 0	0	1 0	0	

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED OFFORE LAUNCH

TABLE 3-C. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (PLANETARY EXPLORATION PROGRAM)

PLD CODE NO. PLD TYPE	LNCH SITE ORBIT (ALT/INC)							Y	AR					,	
WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	MMD (YRS) REFURB T (YRS)	·	80	81	82	83	84	85	86	87	88	В9	90	91	τ
PL-7 LCE 10640 23.5 14.7	ETR ESC/28.5 0 MARS SURFACE SAMPLE RETURN	NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 000 00	0	0 000	0 00 0	2 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	2 0 0
PL-8 LCE 16419 51.5 14.7	ETR ESC/28.5 3 0 MARS SAT, SAMPLE RETURN	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0000	0 0 0 0 0	0 0 0	. 0 0 0 0	0 0 0	0 000	0	0	0 000	0 0 0	1 t 0 0	1 0 0 0	2 2 0 0
PL-10 LCE 2772 11.5 8.4	ETR ESC/28.5 1 0 INNER PL. FOLLOW-ON	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	1 0 0 0	2 0 0 0 3	0 0 0 0	1 0 0 0	0 0 0 4	0 0 0 0 0	1 0 0 0	0 0 0 0 5	0 0 0 0	0 0 0 0	0 0 0 0 5	0 0 0 0	5 5 0 0
PL-11 LCE 13485 19.4 14.7	ETR ESC/28.5 1 0 VENUS RADAR MAPPER	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	0 0 0	0 0 0 0 0	2 2 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0 0	0 0 0 0 0 2	2 0 0
PL-12 LCE 20617 17.3 14.7	ETR ESC/28.5 2 0 VENUS BUOYANT STA.	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 000 00	0 0 0	0 0 0	0 0 0	0	2 2 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0	2 2 0 0
PL-13 LCE 8498 34.9 14.7	ETR ESC/28,5 2 0 MERCURY ORBITER	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	0 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0 0	0 0 0 0	2 2 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0 0 2	2 2 0 0

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-C. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE
(PLANETARY EXPLORATION PROGRAM) (CONTINUED)

PLD CODE NO. PLD TYPE	LNCH SITE ORBIT (ALT/INC)							Y	AR						
WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	MMD (YRS) REFURB T (YRS)		80	81	82	83	84	85	86	87	88	89	90	91	т
PL-14 LCE	ETR ESC/28.5	LNCH SCH	0	0	0	0	0	0	0	0	D .	2	0	Ü	2
6125 25.0 14.7	2 0 VENUS LARGE LANDER	NEW REFURB RETRIEVED	0 0 0	0 0 0	0, 0	0 0 0	0 0	0 0	· 0	0 0 0	0 0 0	2 0 0	0 0 0	0 0 0	2 0 0
		ON-HAND ON-ORBIT	00	0	0	0	0	0	0	0	0	0 2	0 2	5 0	
PL-17 CDE	ETR ESC/28.5	LNCH SCH	1	0	0	0	0	0	0	0	0	0	0	0	1
1146 10.5 10.0	7 0 PIONEER SATURN	NEW REFURB RETRIEVED	1° 0 0	0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0	0 0 0	0 0	1 0 0
	PROBE	ON-HAND ON-ORBIT	0 1	O 1	0	0 1	0	0	0	0	0	0	0	D 1	
PL-18 CDE	ETR ESC/28.5	LNCH SCH	0	1	0	0	0	0	0	٥	0	0	0	0	1
1146 10.5 10.0	7 0 Sat./Uranus	NEW REFURB RETRIEVED	0	1 0 0	0 0	0 0 0	0 0 0	0 0 0	0 0	0 0	0 0 0	0 0	0 0 0	0 0 0	1 0 0
	FLYBY	ON-HAND ON-ORBIT	0	0 1	0 1	0	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	
PL-19 LCE	ETR ESC/28.5	LNCH SCH	0	2	0	0	0	0	0	0	0	0	0	0	2
6888 26.0 14.7	3 0 MARINER JUPITER	NEW REFURB RETRIEVED	0	2 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	2 0 0
	ORSITER	ON-HAND ON-ORBIT	0.	0 2	0 2	0 2	0 2	0 2							
PL-20 CDE	ETR ESC/28.6	LNCH SCH	0	0	0	0	2	0	0	0	0	0	0	0	2
1169 10.5 10.0	1 0 PIONEER	NEW REFURB RETRIEVED	0	0 0 0	0 0 0	0 0 0	2 0 0	0 0 0	0 0 0	0 0 0	0 0	0 0	0 0	0 0	2 0 0
	JUPITER PROBE	ON-HAND ON-ORBIT	8	0	0	0	0 2	0 2	0 2	0 2	0 2	0 2	0 2	0 2	
PL-21 LCE	ETR ESC/28.5	LNCH SCH	0	0	0	0	0	2	0	0	0	0	0	0	2
498 39.0 14.7	5 0 MARINER SAT.	NEW REFURB RETRIEVED	0	0 0 0	0 0 0	0 0	0 0 0	2 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0	0 0 0	2 0 0
	ORBITER	ON-HAND ON-ORBIT	0	0	0	0	0	0 2	0 2	0 2	0 2	0 2	0 2	0 2	

^{*}NEW ROW -- DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW -- MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-C. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (PLANETARY EXPLORATION PROGRAM) (CONCLUDED)

PLD CODE NO. PLD TYPE	LNCH SITE							ΥI	ΔЯ						
WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	ORBIT (ALT/INC) MMD (YRS) REFURBT (YRS)		80	81	82	83	84	85	86	87	88	.89	90	91	Ť
PL-22 CDE 2137 25.0 15.0	ETR ESC/28.5 12 0 MARINER URANUS/ NEP. FLYBY	LNCH SCH NEW REFURB RETRIEVED	0 0 0	0	0 0	0 0 0	0	0 0	2 2 0 0	0 0	0 0 0	0 0	0 0	0 0	2 0 0
		ON-HAND ON-ORBIT	° °	0	0	ō	0	Ō	Ž	2	2	2	2	2	
PL-23 LCE 35795 42.3 14.7	ETR ESC/28.5 4 0 JUPITER SAT. ORB/LANDER	NEW REFURB RETRIEVED	0 0 0	0	0	0 0 0	0 0 0	0	0	0	0	0	1 0 0	1 0 0	2 0 0
		ON-HAND ON-ORBIT	0	0	0	0	0	0	0	0	0	0	D 1	0 2	
PL-26 LCE 497 19.9 14.7	ETR ESC/28.5 3 0 ENCKE RENDEZVOUS	ENCH SCH NEW REFURB RETRIEVED ON:HAND	0 0 0	2 2* 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0	0 0 0	0 0 0 0	0 0 0	0 0	0 0 0	2 0 0
PL-27	ETR	ON-ORBIT	0	2	2 0	0	2 0	1	2	0	0	- 2 0	0	0	1
LCE 2074 13.5 12.2	ESC/28.5 5 0 HALLEY FLYBY	NEW REFURB RETRIEVED	0	0	0	0	0	1 0	0	0	0	0 0 0	0 0 0	0 0 0	1 0 0
	FLYUT	ON-HAND ON-ORBIT	0	0	0	0	0	0 1	0	0 1	0 1	0	0 1	0	
PL-28 LCE	ETR ESC/28.5	LNCH SCH	0	0	0	0	0	0	2	a	0	0	0	0	2
4588 20.8 14.7	3 0 ASTEROID RENDEZVOUS	NEW REFURB RETRIEVED	0	0 0 0	0	0 0	0 0 0	0 0 0	2 0 0	0 0	0 0	0	0	0 0	2 0 0
		ON-HAND ON-ORBIT	0	0	0	0	D 0	0	0 2	0 2	0 2	0 2	0 2	0 2	_

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-D. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (LUNAR EXPLORATION PROGRAM)

PLD CODE NO. PLD TYPE WEIGHT (LBS)	LNCH SITE ORBIT (ALT/INC)							ΥI	EAR						
LENGTH (FT) DIAMETER (FT)	MMD (YRS) REFURB T (YRS)		80	81	82	83	84	85	86	87	88	89	90	91	т
LUN-2 LCE 2475 11.2 7.8	ETR LUN/28.5 0 0 LUNAR ORBITER	LNCH SCH NEW REFURB RETRIEVED	0	0	0	0	1 1 0 0	0 0 0	1 1 0	0	0	0	0	0 0 0	2 0 0
		ON HAND ON ORBIT	8	0	0	0	0 1	0	0 2	0 2	0	0 2	0 2	0 2	, -
LUN-3 CDE 8700 24.0 10.0	ETR LUN/28.5 0 0 LUNAR ROVER	LNCH SCH NEW REFURB RETRIEVED	0	0 0 0	0 0 0	0 0 0	0	0 0 0	0 0 0	1 1 0	1 0 0	0 0 0	0 0 0	0 0 0	2 2 0 0
		ON-HAND ON-ORBIT	a 0	0	0	0 0	0	0	0	0 1	0 2	0 2	0 2	0 2	
LUN-4 LCE 4633 19.1 14.7	ETR LUN/28.5 D O LUNAR HALO	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0 0	0 0 0 0	0 0 0	0 0 0 0 0	0 0 0	1 0 0	0 0 0 0	0 0 0 0	1 1 0 0
LUN-5 CDE 11500 24.0 10.0	ETR LUN/28.5 0 0 LUNAR SAMPLE RETURN	LNCH SCH NEW REFURB RETRIEVED ON HAND ON ORBIT	0 0 0	0 0 0 0	0 0	0 0 0	0 0 0	0 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	1 0 0 0 1	1 0 0 0 2	2 2 0 0

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-E. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (LIFE SCIENCES PROGRAM)

PLO CODE NO. PLO TYPE	LNCH SITE ORBIT (ALT/INC)							YE	AR				_		
WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	MMD (YRS) REFURB T (YRS)		80	81	82	83	84	85	86	87	88	89	90	91	т
LS-1 LCR 683 6.8 2.2	ETR 300/28.5 0 0 LIFE SCIENCE	LNCH SCH NEW REFURB RETRIEVED	2 2 0 2	2 0 2 2	2 0 2 2	2 0 2 2	2 0 2 2	2 0 2 2	0 2 2	2 0 2 2	0 2 2	2 0 2 2	2 0 2 2	2 0 2 2	24 2 22 24
	RESEARCH MODULE	ON-HAND ON-ORBIT	100	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 D	1 0	0	1 0	

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-F. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (EARTH OBSERVATION PROGRAM)

PLD CODE NO. PLD TYPE	LNCH SITE ORBIT (ALT/INC)				_			Yı	AR			***			
WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	MIMD (YRS) REFURB T (YRS)		80	81	82	83	84	85	86	87	88	89	90	91	Т
EO-3A LCR 8630 36.0 10.2	WTR 494/99.0 6 0 EARTH OBSERVATORY SAT,A	ENCH SCH NEW REFURB RETRIEVED ON: HAND ON: ORBIT	0 0 0 0 1	0 0 0 0	0 0 1 1	1 0 1 0	0 0 0 0	0 0 0 0	0 0 0 1	1 0 1 0	0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 1 1	2 0 2 3
EO-3AV LCR 3500 5.0 14.0	WTR 494/99.0 0 0 REVISIT	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	0	0 0 0	0	0 0 0 0	1 0 1 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	1 0 1 1 0	0 0 0 0	2 1 1 2
EO-3B LCR 8630 36.0 10.2	WTR 494/99.0 4 0 EARTH OBSERVATORY SAT.—8	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 1	0 0 0 0	1 0 1 0	0 0 0 0	0 0 0 1	0 0 0 0	1 0 1 0 0	0 0 0 0	0 0 0 0	2 0 2 2
EO-3BV LCR 3500 5.0 14.0	WTR 494/99.0 0 0 REVISIT	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	0 0 0	1 0 1 1	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 1	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	1 0 1
EO-3C LCR 8630 36.0 10.2	WTR 494/99.0 4 0 EARTH OBSERVATORY SAT,C	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	. 0 0 0 0	1 1* 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 1	1 0 1 0 0	0 0 0 0	0 0 0 0	0 0 0 1	0 0 0 0	1 0 1 0	3 1 2 2
EO-3CV LCR 3500 5.0 14.0	WTR 494/99.0 0 0 REVISIT	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 000	0 0 0	0 0 0	0 0 0	1 0 1 1 0	0 0 0 0	0 0 0 0	0 0 0 0	1 0 1 1	0 0 0 0	0 0 0 0	0 0 0 0	1 1 2

^{*}NEW ROW -- DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE *RETRIEVAL ROW -- MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-F. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (EARTH OBSERVATION PROGRAM) (CONTINUED)

PLD CODE NO.	LNCH SITE	- <u> </u>						YE	AR						
PLD TYPE WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	ORBIT (ALT/INC) MMD (YRS) REFURB T (YRS)		80	81	82	83	84	85	86	B7	88	89	90	91	Ţ
EO-3D LCR 8630 36.0 10.2	ETR 400/28.5 0 0 EARTH OBSERVATORY SAT. TEST	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	1 0 0	0 0 0 0 1	0 0 0 0 1	0 0 0 0	0 0 0 1	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0 1	0 0 0 1	0 0 0 0 0	0 0 0 0	1 100
EO-4A CDR 3085 11.0 7.4	ETR 10323/ .0 8 0 SYN. EARTH OBS. SAT.—R&D	ENCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 000	1 0 0 0	0 0 0 0	1 0 0 0	0 0 0 0 2	1 0 0 0 3	0 0 0 1 1 2	0 0 0 0	0 0 0 1 2	0 0 0 0	0 0 0 0	0 0 0 0	3 0 1
EO-48 CDR 3086 11.0 7.4	ETR 19323/ .0 5 0 SYN. EARTH OBS. SAT —OPER.	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	2 0 0 0	0 0 0 0 2	2 0 0 0	0 0 0 0 4	2 2 0 0 0 6	6 0 0
EO-5A LCE 878 9.7 4.7	ETR 19323/ .0 1 0 SPECIAL PURPOSE SAT-A	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	1°00	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	1 1 0 0
EO-58 LCE 676 9.7 4.7	WTR 3000/80.0 1 0 SPECIAL PURPOSE SAT.—B	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	1 1° 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0 0	0 0 0 1	0 0 0 0	0 0 0 0	0 0 0 0	1 0 0
EO-5C LCE 978 9.7 4.7	WTR 280/90.0 1 0 SPECIAL PURPOSE SAT.—C	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 00 0	2 2* 0 0	0 0 0 0 0	0 0 0 0 0	1 0 0 0 3	0 0 0 0 3	0 0 0 0	1 0 0 0	0 0 0 0	0 0 0 0	1 0 0 0 5	0 0 0 0 5	5 5 0 0

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3- F. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (EARTH OBSERVATION PROGRAM) (CONCLUDED)

PLD CODE NO. PLD TYPE	LNCH SITE ORBIT (ALT/INC)	· · · · · · · · · · · · · · · · · · ·						ΥI	EAR		-				
WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	MEMID (YRS) REFURB T (YRS)		80	81	82	83	84	85	86	87	88	89	90	91	Ť
EO-5D LCE 678 9.7 4.7	WTR 400/90.0 1 0 SPECIAL PURPOSE SATD	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	0 0 0 0	1 1* 0 0	0 0 0 0	0 0 0 0 0	1 0 0 0	0 0 0 0	0 0 0 0	1 1 0 0	0 0 0 0	0 0 0 0 3	1 0 0 0	4 0 0
EO-5E LCE 676 9.7 4.7	ETR 19323/ .0 1 0 SPECIAL PURPOSE SAT -E	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	0 0 0 0	0 0 0 0	1 0 0 0	0 0 0 0	0 0 0 0	1 1 0 0	0 0 0 0	0 0 0 0 0	1 1 0 0 0	0 0 0 0	0 0 0 0 0	3 0 0
EO-6 CDR 1717 15.3 8.0	WTR 790/102.0 2 0 TIROS	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0 0	0 0 0 0	1 1* 0 0 0	0 0 0 0	0 0 1 1 1 1	0 0 0 0 1	0 0 0 0	1 0 1 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0 0	2 1 1
EO-7 LCE 1077 10,9 7.2	ETR 19323/ .0 4 0 SYN. METEOR. SAT.	LNCH SCH NEW REFURB RETRIEVED ON HAND ON ORBIT	0 0 0 0 1	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0 1	0 0 0 0	0 0 0 0	1 0 0 0	0 0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0 0	1 1 0 0

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-G. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (EARTH AND OCEAN PHYSICS APPLICATION PROGRAM)

PLD CODE NO. PLD TYPE	LNCH SITE ORBIT (ALT/INC)							Y	AR						
WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	MMD (YRS) REFURB T (YRS)		80	81	82	83	84	8 5	86	87	88	89	90	91	т
EOP-3 LCE	WTR 325/90.0	ENCH SCH	0	0	1	0	0	. 0	C	0	o	0	0	0	
3030 18.3 14.7	5 0 SEASAT	NEW REFURB RETRIEVED	0 0 0	0 0 0	1* 0 0	0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0	1 0 0
		ON-HAND ON-ORBIT	0	0	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	
EOP-4 CDE	WTR 18200/90.0	LNCH SCH	0	0	1	0	0	0	0	0	0	0	0	0	7
2231 10.0 6.5	3 0 Geopause	NEW REFURB RETRIEVED	000	0	1° 0 0	0	0 0 0	0 0	0 0 0	0 0 0	0	0 0 0	0 0	0 0 0	1 0 0
		ON-HAND ON-ORBIT	0 1	0 1	0	0 2	0 2	0 2	0 2	0 2	0	0 2	0 2	0 2	
EOP-5 LCE	WTR 108/90.0	LNCH SCH	1	0	0	0	0	0	0	0	0	0	0	0	1
10236 30.2 14.7	100,500.0 10 0 GRAV. GRADIOMETER	NEW REFURB RETRIEVED	1* 0 0	0 0	0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	1 0 0
	GRADIOMETER	ON-HAND ON-ORBIT	0 1	0 1	0 1	0	0	. 0 · 1	0	0 1	0 1	0 1	0 1	0 1	
EOP-BA	ETR 350/28.5	LNCH SCH	2	0	0	0	0	2	0	0	0	0	0	0	4
CDE 225 1.8 1.6	0 0 0 MINI-LAGEOS	NEW REFURB RETRIEVED	2 0 0	0 0	0 0 0	0 0 0	0 0	2 0 0	0 0	0 0 0	0 0 0	0 0	0 0 0	0 0 0	4 0 0
		ON-HAND ON-ORBIT	0 2	0	0 2	0 2	0 2	0 4							
EOP-6B CDE	ETR 360/55.0	ruch sch	2	0	0	0	0	2	o	0	0	0	0	0	4
225 1.6 1.8	0 0 0 MINI-LAGEOS	NEW REFURB RETRIEVED	2*. 0 0	0	0 0 0	0 0 0	0	2 0 0	0 0 0	0 0 0	0 0 0	0	0 0 0	0 0 0	4 0 0
		ON-HAND ON-ORBIT	0 2	0 2	0 2	0 2	0 2	0 4	0 4	0 4	Q 4	0 4	0 4	0 4	
EOP-6C CDE	WTR 350/90.0	LNCH SCH	2	0	0	'O	0	2	0	0	0	0	0	0	4
225 1.6 1.6	0 0 MINI-LAGEOS	NEW REFURB RETRIEVED	2* 0 0	0 0 0	0 0 0	0 0 0	0 0 0	2 0 0	0	0 0 0	0 0 0	0 0	0 0 0	0 0 0	400
		ON-HAND ON-ORBIT	5 0	0 2	0 2	0 2	0	0 4							

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-G. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (EARTH AND OCEAN PHYSICS APPLICATION PROGRAM)

(CONCLUDED)

PLD CODE NO. PLD TYPE	LNCH SITE ORBIT (ALT/INC)					,		Y	AR						
WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	MMD (YRS) REFURB T (YRS)		80	81	82	83	84	85	86	87	88	89	90	91	т
EOP-8 LCR 1209 10.4 6.2	WTR 216/90,0 1 0 VECTOR MAGNETIC SAT.	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	3 3* 0 0	0 0 0 0	0 0 0 3 3	0 0 0 0	0 0 0 0	3 0 3 0 0	0 0 0 3 3	0 0 0 0	0 0 0 0	3 0 3 0 0	0 0 0 0 3	9 3 6 6
EOP-9 LCR 915 10.2 5.8	ETR 810/28.5 1 0 MAGNETIC MONITOR SAT.	NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	1 0 0	0 0 0 0	0 0 0 0	0 0 0 1	0 0 0 0	1 0 1 0	0 0 0 1	0 0 0 1	0 0 0 0 0	1 0 1 0	0 0 0 0	3 1 2 2

^{&#}x27;NEW ROW - DELIVERED ON AN EXPENÇABLE LAUNCH VEHICLE

PRETRIEVAL ROW - MUST BE RETRIEVED BIT ORE LAUNCH

TABLE 3-H. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (SPACE TECHNOLOGY PROGRAM)

PLD CODE NO. PLD TYPE	LNCH SITE ORBIT (ALT/INC)							Y	EAR						
WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	MMD (YRS) REFURBT (YRS)		80	81	82	83	84	85	86	87	88	89	90	91	r.
ST-1 CDR 10200 35.0 14.0	ETR 270/28.5 0 LONG DURATION EXPOSURE MODULE	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	1 1* 0 0	0 0 0 1	1 0 1 1	0 0 0 0	1 0 1 1	0 0 0 0) 0 1 1	0 0 0 0	1 0 1 1 0	0 0 0 0 0 1 0	1 0 1 1 1	0 0 0 0	6 1 5 6

^{*}NEW ROW -- DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-1. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (NON-NASA/NON-DOD PAYLOADS)

DI D CODE NO		T													
PLD CODE NO. PLD TYPE WEIGHT (LBS) LENGTH (FT)	LNCH SITE ORBIT (ALT/INC) MMD (YRS)		\vdash					Y	EAR	_					
DIAMETER (FT)	REFURB T (YRS)		80	81	82	83	84	85	86	87	88	89	90	91	Т
NN/D-1 CDR	ETR 19323/ .0	LNCH SCH	3	0	0	2	3	2	2	0	0	2	3	2	19
4498 12.2 8.3	10 0 INTEL SAT.	NEW REFURB RETRIEVED	3*	0 0 0	0 0 0	2 0 0	3 0 0	2 0 0	2 0 0	0 0 1	0 0 1	0 2 2	0 3 3	0 2 0	12 7 7
		ON-HAND ON-ORBIT	0 7	0 7	0 7	0 9	0 12	0 14	0 16	1 15	2 14	2 14	2 14	0 16	
NN/D-2A LCE	ETR 19323/ .0	LNCH SCH	1	2	2	1	0	0	0	0	0	0	0	0	6
1057 11.1 7.6	7 0 U.S. DOM. SATA	NEW REFURB RETRIEVED	1* 0 0	2 0 0	2 0 0	1 0 0	0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	6 0 0
		ON-HAND ON-ORBIT	0 4	6	8	9	9	9	0 9	9	0	0 9	0 9	0 9	
NN/D-28 CDR	ETR 19323/ .0	LNCH SCH	0	0	0	0	1	1	2	2	3	2	2	1	14
4498 12.2 8.3	10 0 U. S. DOM. SAT. —B	NEW REFURB RETRIEVED	000	0 0 0	0 0 0	0 0 0	1 0 0	1 0 0	2 0 0	2 0 0	3 0 0	2 0 0	2 0 0	1 0 0	14 0 0
		ON-HAND ON-ORBIT	0	0	0	0	0 1	0 2	0 4	0 6	0 9	0 11	0 13	0 14	•
NN/D-2C CDR	ETR 19323/ .0	LNCH SCH	0	0	0	3	0	0	0	0	3	0	0	0	6
974 17.9 6.3	5 0 TDRS	NEW REFURB RETRIEVED	0	0	0 0 0	3 0 0	0 0 0	0 0 0	0 0 0	0 0 0	3 0 0	0	0 0 0	0	6 0 0
		ON-HAND ON-ORBIT	0 3.	0 3	0	0	0 6	0 6	0 6	0 6	0 9	0 9	0 9	6 9	
NN/D-3 LCR	ETR 19323/ ,0	LNCH SCH	0	1	1	0	0	1	0	0	0	0	1	0	4
2054 11.4 8.2	5 0 DISASTER WARNING	NEW REFURB RETRIEVED	0	1 0 0	1 0 0	0 0 0	0 0 0	1 0 0	0 0 1	0 0 1	0 0 0	0 0 0	0 1 0	0 0 0	3 1 2
		ON-HAND ON-ORBIT	0	0 1	0 2	0 2	0 2	0	1 2	2 1	2 1	<u>2</u> 1	1 2	1 2	,
NN/D-4 LCE	ETR 19323/ ,0	LNCH SCH	2	2	1	1	1	0	1	0	1	0	1	0	10
1422 12.5 10.3	193237 .0 5 0 TRAFFIC MANAGEMENT	NEW REFURB RETRIEVED	2* 0 0	2 0 0	1 0 0	1 0 0	1 0 0	0 0 0	1 0 0	0 0 0	1 0 0	0 0 0	1 0 0	0 0 0	10 0 0
		ON-HAND ON-ORBIT	0 7	0 9	0 10	0 11	0 12	0 12	0 13	0 13	0 14	0 14	0 15	0 15	

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-1. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (NON-NASA/NON-DOD PAYLOADS) (CONTINUED)

PLD CODE NO. PLD TYPE	LNCH SITE ORBIT (ALT/INC)							Y	EAR						
WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	MMD (YRS) REFURB T (YRS)		80	81	82	83	84	85	86	87	88	89	90	91	7
NN/D-5 CDR	ETR 19323/ .0	LNCH SCH	0	1	1	1	7	1	1	1	1	1	1	1	11
982 12.2 5.8	7 0 FOREIGN COMM.	NEW REFURB RETRIEVED	0 0 0	1 0 0	1 0 0	1 0 0	0 1 3*	0 1 1	0 1 0	0 1 0	0 1 1*	0 1 1*	0 1 1*	0 1 1*	3 8 8
		ON-HAND ON-ORBIT	0 4	0 5	0 6	0 7	2 5	2 5	1 6	0 7	0 7	0 7	Q 7	0 7	
NN/D-6 LCE	ETR 19323/ .0	LNCH SCH	0	0	0	0	0	1	0	0	1	0	1	0	3
3871 13.1 11.6	5 0 COMM. R&D PROTO	NEW REFURB RETRIEVED	0 0 0	0 0 0	0	0 0 0	0 0 0	1 0 0	0 0 0	0 0	1 0 0	0 0 0	1 0 0	0 0 0	3 0 0
		ON-HAND ON-ORBIT	0	0	0	0	0	0 1	0	0	0	0 2	0	0 3	
NN/D-8 LCR	WTR 920/103.0	LNCH SCH	1	1	1	0	0	1	1	1	1	0	1	1	9
2025 12.4 10.2	2 0 ENVIR. MONITORING	NEW REFURB RETRIEVED	1* 0 0	1* 0 0	1* 0 0	0	0 0 3	0 1 0	0 1 0	0 1 1	0 1 1	0 0 1	0 1 1	0 1 0	3 6 7
	MONTORING	ON-HAND ON-ORBIT	0	0 2	0 3	3 0	3	2	1 2	1 2	1 2	2	2 1	1 2	
NN/D-9 CDR	ETR 19323/ .0	LNCH SCH	0	1	1	0	1	0	1	0	1	0	1	0	6
807 10.3 6.0	4 0 FOREIGN SYN. MET. SAT.	NEW REFURB RETRIEVED	0 0 0	1 0 0	1 0 0	0 0 0	0 1 1*	0 0 1	0 1 1	0 0 0	0 1 1	0 0 0	0 1 1	0 0 0	2 4 5
	MEI. SAI.	ON-HAND ON-ORBIT	D 1	0 2	0 3	0 _3	0 3	1 2	1 2	1 2	1 2	1 2	1 2	1 2	
NN/D-10 CDR	ETR 19323/ .0	LNCH SCH	0	1	1	1	0	1	0	1	1	1	0	1	8
807 10.3 6.0	4 0 GEOSYN. OPER. ENVIRON. SAT.	NEW REFURB RETRIEVED	0	1 0 0	1 0 0	1 0 0	0 0 3	0 1 1	0 0 1	0 1 1	0 1 0	0 1 1	0 0 0	0 1 1	3 5 8
		ON-HAND ON-ORBIT	0	0 4	0 5	0 6	3	3	4 2	4 2	3	3	3	3	
NN/D-11 LCR	WTR 300/97.0	LNCH SCH	1	1	1	1	1	1	1	1	1	1	1	1	12
8630 16.0 10.2	5 0 LOW ORBIT	NEW REFURB RETRIEVED	1* 0 0	1* 0 0	1* 0 0	0 1 2*	0 1 1	0 1 1	0 1 1	0 1 1	0 1 1	0 1 1	0 1 1	0 1 1	3 9 10
	EARTH RES.	ON-HAND ON-ORBIT	0 4	0 5	0 6	1 5	1 5	1 5	1 5	1 5	1 5	1 5	1 5	1 5	

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

TABLE 3-1. AUTOMATED PAYLOAD DESCRIPTION/SCHEDULE (NON-NASA/NON-DOD PAYLOADS) (CONCLUDED)

PLD CODE NO. PLD TYPE	LNCH SITE ORBIT (ALT/INC)							YE	AR						
WEIGHT (LBS) LENGTH (FT) DIAMETER (FT)	MMD (YRS) REFURB T (YRS)		80	81	82	83	84	85	86	87	88	89	90	91	Т
NN/D-12 CDR 3085 11.0 7.4	ETR 19323/ .0 5 0 GEOSYN. EARTH RES.	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	2 0 0 0	0 0 0 0	2 0 0 0	0 0 0 0 4	4 0 0
NN/D-13 CDR 3085 11.0 7.4	ETR 19323/ .0 5 0 FOREIGN SYN. E, OBS.	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	0 0 0	0 0 0 0	0 0 0	0 0 0 0	0 0 0	0 0 0	0 0 0 0	1 0 0 0	2 0 0 0 3	0 0 0 3	1 0 0 0	4 0 0
NN/D-14 LCR 5082 13.7 12.7	WTR 200/98.0 3 0 GLOBAL EARTH & OCEAN MON.	LNCH SCH NEW REFURB RETRIEVED ON-HAND ON-ORBIT	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0 0	3 0 0 0	0 0 0 0	3 0 0 0	0 0 3 3	3 0 3 0 0	0 0 3 3	9 6 3 6

^{*}NEW ROW - DELIVERED ON AN EXPENDABLE LAUNCH VEHICLE

^{*}RETRIEVAL ROW - MUST BE RETRIEVED BEFORE LAUNCH

EXPLANATION OF COLUMN HEADINGS FOR TABLE 4

Heading			Exp	anation
FLT NO		te the l	aunc	used purely for reference and h sequence. A "D" following a DoD flight.
LNCH SITE	Launch site; Ki Test Range.	SC, Ker	nedy	Space Center; WTR, Western
TRIP				or Tug launched by Shuttle,
CODE	Payload code.			
NAME .	Payload name.			
		P L+P L	- - -	Pallet only Spacelab plus Pallet Spacelab only
TYPE	Payload type.			
		CDR CDE LCR LCE N R	- - - -	Current Design Reusable Current Design Expendable Low Cost Reusable Low Cost Expendable New payload Refurbished payload
WEIGHT	Payload launch	weight	in lb	•
L/D	Payload length	and dia:	mete	r in feet.
ORBIT HA/HP/INC	Payload orbit:			
		HA HP	- -	Apogee in n. mi. Perigee in n. mi.

INC

Inclination in degrees

Heading

Explanation

ENERGY STAGE

Tug (if any) used to deploy payloads:

TUG Final Tug (IOC, 1984) ITUG -Initial Tug (1981 - 1983) XITUG -Expendable initial Tug

(1981 - 1991)

Expendable solid pro-B-II

> pellant kickstage (1981 - 1991)

SHUTTLE CARGO

Total weight in cargo bay.

WEIGHT

SHUTTLE CARGO LENGTH

Sum of length of all elements in cargo bay (i.e., pay-

loads, Tug, OMS kit)

SHUTTLE PERF LOAD FACTOR

If the flight involves a Tug, this is the Shuttle cargo weight divided by the Shuttle performance into a 160 × 160 n.mi. orbit. Otherwise, this is the sum of Shuttle cargo weight and integral OMS propellant divided by the Shuttle performance into a 50 × 100 n.mi. transfer orbit.

SHUTTLE MANIFEST USER INFORMATION

Examination of the manifest (Table 4) shows that the sum of the payload weights/lengths is equal to the Shuttle cargo weights/lengths for some of the flights while this is not true for other flights. This difference is because of the requirement for Orbital Maneuvering Systems (OMS) kits or Tugs for some flights which is added to the payload weight to obtain the Shuttle cargo weight. The dimensional characteristics of the OMS kits or Tugs are also added to the payload lengths to obtain the cargo length. Examples are presented below which show the above-mentioned effects.

Example No. 1 — Flight No. 1 in 1980 shows a total payload-up weight of 21 293 pounds and a cargo weight of 35 691 pounds. This flight requires an OMS kit (tankage plus propellant) to satisfy the mission energy requirements, and the kit will be located in the Shuttle cargo bay. The inert weight of the OMS kit is 2502 pounds and the propellant weight included in the kit for this mission is 11 896 pounds. Thus, the total cargo weight is the sum of the payload weight (21 293 pounds), OMS kit inert weight (2502 pounds), and the OMS kit propellant (11 896 pounds) for a total of 35 691 pounds. The cargo-down weight for this flight is the sum of the payload-down weight (4786 pounds) and the empty OMS kit weight (2502 pounds) for a total of 7288 pounds. The OMS kit utilized in this analysis occupies 4.5 feet of cargo bay length and when added to the total payload-up length of 52.5 feet, yields a total cargo-up length of 57.0 feet.

Example No. 2 — Flight No. 4 in 1980 is a sortic mission on which the payload remains attached to the Shuttle throughout the flight. Since no OMS kit is required for this mission, the payload weight/length are equal to the cargo weight/length. The difference in the up and down weight on this flight is a result of consumables expended on orbit (Shuttle RCS propellant and Shuttle power expendables chargeable to the payload, fuel cell water, ECS reserves, experiment expendables, and condensate dumped just prior to return). The lengths shown for Spacelab plus pallet include the tunnel length.

Example No. 3 — Flight No. 9 in 1981 requires a Tug to accomplish the mission. As shown, the total payload-up weight is 3111 pounds and the Shuttle cargo-up weight is 57 628 pounds. The Shuttle cargo weight includes the payload weight (3111 pounds), the Tug inert weight (6284 pounds), and the Tug propellant (48 233 pounds) for this mission required to deliver the payloads to their destination and return the Tug to the near vicinity of the Shuttle. The cargo-up length is the sum of the payload lengths (22.5 feet) and the Tug length (35 feet). Since no payloads are returned on this flight, the Shuttle cargo-down weight consists only of the empty Tug (6284 pounds).

TABLE 4. SHUTTLE CARGO MANIFEST

						1980		Share and Share				SPANIA.
F) \	L N CH				AYLOAD	anatar vili i mondita	<mark>#E</mark> TT TAK <u>E</u> ₹ NOTE - EN		ENERGY		CARGO	SHUTTLE
	SITE		CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	ORBIT HAVHPVINC (NMIVNMIVDEG)			LENGTH (FT)	PERF LOAD FACTOR
				LARGE SPACE TELESCOPE LIFE SCIENCES MODULE MINI-LAGEOS MINI-LAGEOS	-LCR-N	• 6.82. • 225.	.13.0/ 2.2	340/ 340/ 28. 300/ 300/ 28. 350/ 350/ 28. 350/ 350/ 28.	5.	35891	57.0	.679
	•			■EXPLORER - LEO SOLAR PHYSICS MISSION :	-CDR -LCR	640. 4146.	12.2/ 2.6 13.1/11.6	297/ 297/ 28.9 270/ 270/ 28.9		7288	29.8	•
1		UP	-L 5-1	.LIFE SCIENCES MODULE	.LCR-N	. 682.	13.0/ 2.2	- 297/ 297/ 28.5 - 300/ 300/ 28.5 - 270/ 270/ 28.5	5 .	12476	42.8	.425
	•	-	.AST-4	⇒HEAO C	-CDP	6064	•	250/ 250/ 28.9	•	8566	22.6	· • • • • • • • •
1	-KSC		• •E0-3D •A5T-4	.EARTH OBS. SATHEAO C				300/ 300/ 28.5 250/ 250/ 28.5		26413		.512
	•			LIFE SCIENCES MODULE LIFE SCIENCES MODULE	-LCR -LCR			300/ 300/ 28.5 300/ 300/ 28.5		3814.	30.5.	•••••
4	-KSC	UP	.AST-11A	SOLAR PHYSICS (P)	LCR-N	21055.	25.G/14.0.	. 210/ 210/ 28.5	•	21055.	25.C.	.478
	• •	DN	.AST-11A	SOLAR PHYSICS (P)	LCR .	19323.	.25.0/14.6.	. 210/ 210/ 28.5	•	19323.	25.0	,
, S	KSC			HIGH ENERGY PHYSICS (P) -HIGH ENERGY PHYSICS (P)			55.0/14.0.	. 120/ 120/ 28.5	•	31227	55.C.	.501
	•			HIGH ENERGY PHYSICS (P) HIGH ENERGY PHYSICS (P)			55.0/14.0.	120/ 120/ 28.5	•	28242	55.0.	•••••

NOTES: • SUBSCRIPT D = DOD FLIGHT

[•] FLIGHT NUMBERS DO NOT REPRESENT A PRIORITY OR A SEQUENCE OF FLIGHTS

						1980	The state of the s	<u> </u>				· <u>·</u>
FLT	LNCH			P	AYLOAD	SA SA COMMITTEE SA SA SA SA SA SA SA SA SA SA SA SA SA		A CONTRACT OF THE PROPERTY OF	ENERGY	SHUTTLE	CARGO	SHUTTLE
	SITE	TRIP	CODE	. NAME	1455	(F8) 4EIG⊢;	L/D {FI/FT}	OSEIT HAVHPVINC (NMIVNMIVDEG)		WEISHT (EB)	LENGTH (FT)	
6	KSC .	. UP	.L5-2A7	LIFE SCIENCE (L)	LCR-N	37532	58.5/14.0.	. 150/ 150/ 28.5	•	37532	58.5	.600
	• .	DN	.LS-2A7	LIFE SCIENCE (L)	-LCR	. 30185.	58.5/14.0	. 15C/ 15C/ 28.5	•	10185	58.5	
7.	KSC	UP	•LS-2A7	LIFE SCIENCE (L)	LCR-R	. 37532.	58.5/14.0	150/ 150/ 28.5	•	37532	58.5	.600
	•	DN	•LS-2A7	LIFE SCIENCE (L)	-LCR	30185	58.5/14.D	15U/ 15D/ 28.5	• • • • • • • • • • • • • • • • • • •	30185.	58.5	• • • • • • • • •
8	KSC .	UP	•ST-2A	SPACE TECHNOLOGY (L+P)	.LCR-N	25296	60.0/14.0	?UC/ 200/ 55.0	•	25296	60.0	. 584
		DN	.ST-2A	SPACE TECHNOLOGY (L+P)	.LCR	24532	.60.0/14.C	26C/ 2D0/ 55.C	•	24532	60.0	• • • • • • • • • •
9.	KSC .	UР	.ST-28	SPACE TECHNOLOGY (L+P)	·LCR-N	25298	60.C/14.C	200/ 200/ 55.0	•	25 29 6	60.0	.584
		אס	.ST-28	-SPACE TECHNOLOGY (L+P)	-LCR	24532	50.0/14.C	200/ 200/ 55.0	• • • • • • • •	24532	60.0	• • • • • • • • • • • • • • • • • • •
10	ĸsc	UP	• •0A+1A	.OFFICE OF APPLIC. (L+P)	LCR-N	27002	60.0/14.0.	180/ 180/ 55.0		27002	60.0	. 583
		DN	-0A-1A	OFFICE OF APPLIC. (L+P)	.LCR	26138.	50.0/14.G	. 180/ 180/ 55.0	-	26138	60.0	• • • • • • • • • •
11.	KSC .	UP	• -0A-18	.OFFICE OF APPLIC. (L+0)	•LCR-N	25402	6U.C/14.U.	. 180/ 180/ 55.C	•	25402	60.0	561
		DN	0A-18	●OFFICE OF APPLIC● (L+□)	•		•		•	24538		• • • • • • • • • • • • • • • • • • •
12	KSC .	UP .	SP-1 A	.SPACE PROCESSING (L+P)	•		•	1807 1807 28.5		76084		499
	•	מס	- 5P - 1A	SPACE PROCESSING (L+P)	-LCR	25326	€0.0/14.C.	180/ 180/-28.5	· · · · · · · · · · · · · · · · · · ·	25320	60.0	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

		,					1980						
	I		i maige, autoria		PAY	CLOAC				"NER GY	SHUTTLE		SHUTTLE PERF
NO	_	N CH I TE	TRIP	· CODE	NAME	TYPE	EIGHT (18).	L/D (FT/FT)	ORBIT HAZHP	INC STAGE	LEIGHT		LOAD
13	3 - K	sc .	UP .	NN/D-16A	EARTH OBSERVATION (L+P)	LCR-N.	26502	60.C/14.0.	180/ 180/	28.5.	26502.	60.0	.504
	•	•	DN	1 NN/D-16A	SEARTH OBSERVATION (L+P)	LCR	25638	60.0/14.0	180/ 180/	28.5.	. 25638. •	60.0.	
11	. K	sc .	UP .	NN/D-16C	GPL 1 (L+P)	LÇR-N.	26482	60.0/14.0.	2007 2007	28.5.	26482.	50.0.	.525
	•	:	DN	NN/D-16C	_GPL 1 (L+P)	LCR	2571R	.60.0/14.0.	200/ 200/	28.5.	25718.	60.0	

				4		1981	i i na mara na mara na mara na mara na mara na mara na mara na mara na mara na mara na mara na mara na mara na I					
FLT	LNCH			PA	YLOAD		Francisco III Region de	to the second second second second second second second second second second second second second second second	ENERGY	SHUTTLE		SHUTTLE
NO	SITE	TRIP	CODE	NAME	TYPE	VEIGHT (LB)	L/D (FT/FT)	ORBIT HAZHPZINC (NMIZNMIZDEG)			LENGTH	,,
1	•KSC		• PL-10	INNERPLANETARY FOLICY-ON SPACE PROCESSING (P)	LCE-N	2772. 6171.	31.5/ 8.4. 5.0/14.0.	ESCAPE 16C/ 16Q/ 28.5	.ITUG .B-II	30305	60.0	.482
,	•	DN	.SP-18	-SPACE PROCESSING (P)	-LCR	5239.	5.0/14.0.	160/ 160/ 28.5	_ITUG	11523	40.6	· • • • • • • • • • • • • • • • • • • •
2	KSC	-	•PL-10 •\$P-18	INNERPLANETARY FOLLOW-ON SPACE PROCESSING (P)	•LCE-N	2772. 6171.	11.5/ 8.4. 5.0/14.0.	ESCAPE 160/ 160/ 28.5	-3-11 -3-11	. 30305	50.0	.482
	•	DN.	•SP-18	SPACE PROCESSING (P)	LCR .	5239.	5.0/14.0-	160/ 160/ 28.5	.1706	. 11523.	40.8	
. 3	KSC	-	.PL-18 .SP-1C	*PIONEER SATRN/URAN FLYBY *SPACE PROCESSING (P)	-CDE-N	1146. 5121.	10.5/10.0. 5.0/14.0.	ESCAPE 160/ 160/ 28.5	.x1ue	61755		.983
			• 2P-1C	-SPACE PROCESSING (P)	LCR .	4189.	5.0/14.0.	160/ 160/ 28.5	•	4189	5.0.	
4 .			•PL-19	_MARINER JUPITER ORB.	LCE-N	6888	25.0/14.7.	ESCAPE	XTUG	40480.	60.0	.644
		DN	•	•		•	·	Elic solo (17 Jahra 18 octobre 18 Jahra 18 octobre 18 Jahra 18 octobre 18 Jahra 18 octobre 18 Jahra 18 octobre	•		.C.	
5			• • • • • • • •	-MARINER JUPITER ORB.	LCE-N	6882	25.6/14.7.	ESCAPE	XTUG .	40480.	60.0.	.644
•	•	DN	•	•	• •		·	Meaning to the second s		0.	.0.	
6	KSC	UP .	PHY-1B E0-4A	EXPLORER MEDIUM ALT. SEOS R AND D	CCR-N.	857. 3085.	12.8/ 5.C. 11.0/ 7.4.		 ITUG	50127	58.8.	.957
•	•	DN	•	•	• •		•	*** • • • • • • • • • • • • • • • • • •	ITUS .	6784.	35.0.	* * • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

g ku - Saa	Mary Mary	Colors ave	make disambilian di	IADLE 4.						and the state of t	and the second		
	College College	Jan 18 Same kally della 18	omittieks kreiniste koltina et en			1981	No. 1. Company			Man Change William VI 6 1			
FIT	MCH		TO A COMMON TO SERVICE OF THE SERVIC		YLOAD						SHUTTL	E CARGO	
NO	SITE	TRIP	CODE	NAME	TYPE	VEIGHT	L/D (FT/FT)	ORBIT HAZHPZ (NMIZNMIZDE	INC STAGE	WEIGHT	LENGTH (FT)	
7 .	KSC	. UP	.PHY-3A	-ENVIRON. PERTUB. SAT. SPACE PROCESSING (P)	.CDR-Na .LCR-R.	3846 5121	.15.8/ 7		6986/ 6900/	55.G.TTUG	39255		.712
6	inian and ingra-		SP-1C	•		•	5.0/14	•	160/ 160/	55.0.ITUG	. 1047 <u>3</u>	40.0	
8-	KSC	UP	.EOP-9 .NN/D-2A		LCR-N.	915.	10.2/ 5	.8.	1080/ 540/ SYNC.EG.	28.0.1146	54743	56.3	871
		. DN	•	•						.ITUG	6284	35.C	
9.	KSC	UP	NN/D-2A NN/D-3	- LU.S. DOMCOMSAT DISASTER WARNING SAT.	LCE-N.	1857	11.1/ 7	.6.	SYNC.EG.		• 57628.	57.5	.917
•		DN	•		•			•		.Ilu6	6284	35.€	•
10.	KSC	UP	NN/D-4 NN/D-4	TRAFFIC MANAGEMENT .TRAFFIC MANAGEMENT			12.5/10 12.5/10				56882		.905
٥) (DN	•	•						.ITUG	6284.	35.D.	
11.	KSC .	UP.	NN/D-5 NN/D-9		-COR-N-	982. 807.	12.2/ S 10.3/ 6	.8. .0.	SYNC.EG.		53938		.858
•		DN				•		•		.ITUG	6284,	35.0.	
12-	KSC .	UP .	NN/D-10 . LS-1	GEOSYNC. OPERATIONAL MET LIFE SCIENCES MODULE	-CDR-N- -LCP-R.	°C7. 682.	10.3/ 6 13.0/ 2	.D.	SYNC.E9. 3067 3067		52624	58.3.	.837
•		DN	•	•	•	•		•		.1106	6284.	35.0.	

						1981						
FLT	LNCH				AYLOAD			S. B. W. L. S. B. B. B. M. W. B. B. B.	CHERCY		CARGO	SHUTTLE PERF
	SITE	TRIP	CODE	NAME		WEIGHT (LB)	L/D (fT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)				
13	KSC		• 421-61					. 340/ 340/ 28.5 300/ 300/ 28.5		. 13345.	22.5	. 435
		•	.AST-1A	-EXPLORER - LEO	.CDR .CDR	. 640. . 3500.	.12.2/ Z.6. 5.0/14.0.	297/ 297/ 28.5 297/ 297/ 28.5 340/ 340/ 28.5	• a	7282	33.9	•
14.	KSC	UP	.AST-1A	•			,	297/ 297/ 28.5		5104	15.7.	. 345
•		-	-LS-1 -LS-1	LIFE SCIENCES MODULE LIFE SCIENCES MODULE	.LCR .LCR	. 556 . E56	13.0/ 2.2. 13.0/ 2.2.	300/ 300/ 28.5 300/ 300/ 28.5	-	3814	30.5	• • •
15	KSC	ŲΡ		•	•					• O	_0	. 281
•		DN •	• \$T-1 •	LONG DURATION EXP. FAC.	.CDR	. 10200.	35.5/14.0.	270/ 270/ 28.5		10200	35.5	•
16.	KSC	UP	.ast-iua	-STELLAR ASTRONOMY (P)	LCR-N	. 31857.	50.0/14.6.	162/ 162/ 28.5		31957	50.0.	.549
		. ON	• AST-10A •	STELLAR ASTRONOMY (P)	.LCR	. 30225.	50.0/14.C.	162/ 162/ 28.5	•	. 3U225.	50.0	•
17.	KSC	. UP	-ASY-11A	_SOLAR PHYSICS (P)	-LCR-R	. 21055.	25.0/10.0	210/ 210/ 28.5	•	21055	25.0.	. 470
•	•	DN	• AST-11A •	SOLAR PHYSICS (P)	LCR •	. 19327.	25.0/14.S.	210/ 210/ 28.5		. 19323. •	25.0	
18.	•			HIGH ENERGY PHYSICS (P)						22506	30.0	458
•	•	. אם	■PH Y-6C	-HIGH ENERGY PHYSICS (P)	• •F63	20434.	30.4/14.0.	120/ 120/ 55.0	•	20434	30.0	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

				en i de la liggio de la sectión de la grafia de de la decimina de la ligidad de la competitación de la grafia d La competitación de la competit	**************************************	1981	en la la la la la la la la la la la la la	ers sy s 20 ° jili 1 € €		V	<u> </u>	-5.4 4 4 <u>-</u>
FLT	LNCH		And the second of the second	PA	YLOAD	n kalabar — myss	<u> </u>	<u> Primary de la companya de la companya de la companya de la companya de la companya de la companya de la compa</u>			CARGO	SHUTTLE
	SITE		CODE	NAME .	TYPE	WEIGHT	L/0 (FT/FT)	ORBIT HAVHPVIN			LENGTH (FT)	PERF LOAD FACTOR
19	•K2C	UP	PHY-607	HIGH ENERGY PHYSICS (P)	LCR-N.	20720.	27.0/14.0	120/ 120/ 28	.5.	20720	27.0.	379
	.	o DN	-PH Y-6D7	HIGH ENERGY PHYSICS (P)	LCR	18138	27.0/14.0	120/ 120/ 28	.5.	18138	27.0	•
20	XSC	UP	PHY-7A	ATMOS. SPACE PHY. (L+P)	LCR-N	29002	60.0/14.0	200/ 200/ 28	.5.	29002	60.0.	.555
	•	- ON	•PHY-7A	ATMOS. SPACE PHY. (L+P)	LCR .	28238	60.0/14.O	200/ 200/ 28	•5•	28238.	60.0	•
21	KSC	UP	LS-2A7	LIFE SCIENCE (L)	LCR-R	37532.	58.5/14.0	, . 150/ 150/ 28	.5.	37532	58.5.	.600
	•	DN	+LS-2A7	LIFE SCIENCE (L)	LCR .	30185.	58.5/14.0.	150/ 150/ 28	•5•	30185	58.5	•
22	KSC	UP	LS-2A7	_LIFE SCIENCE (L)	LCR-R	37532	58.5/14.6.	150/ 150/ 28	.5.	37532	58.5.	. 600
		DN.	LS-2A7	LIFE SCIENCE (L)	LCR .	30185	58.5/14.0.	150/ 150/ 28	.5.	30185	58.5	•
23.	KSC	UP .	• ST-2A	SPACE TECHNOLOGY (L+P)	LCR-R.	25296.	60.0/14.6.	200/ 200/ 55	.0.	25296	60.0	. 584
•		DN .	• ST-2A •	-SPACE TECHNOLOGY (L+P)	.LCR .	24532.	60.C/14.G.	200/ 200/ 55	.C.	24532	60.0	
24	KSC	UP .	ST-2B	SPACE TECHNOLOGY (L+P)	LCR-R.	25296.	60.0/14.0.	200/ 200/ 55	.c.	25296	60.0	.584
	•	DN .	ST-2B	SPACE TECHNOLOGY (L+P)	LCR .	24532.	60.0714.0.	200/ 200/ 65	0	24532.	60.0	
25.	KSC .	UP	5T-2C	SPACE TECHNOLOGY (L+P)	LCR-N.	25296.	60.0/14.C.	200/ 200/ 55	•C •	25298	60.0	.584
•	•	DN -	ST-2C	SPACE TECHNOLOGY (L+P)	LCR .	24532.	60.0/14.0.	200/ 200/ 55	.U.	24532.	60.0.	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

		. '				1981			<u> </u>		
FLT	LNCH			•	AYLOAD			E LE DC V		CARGO	
NO	SITE	TRIP	CODE	NAME		WEIGHT L/O	ORBIT HA/HP/INC (NMI/NMI/DEG)				PERF LOAD FACTOR
26	KSC .	• UP	.ST-2D	SPACE TECHNOLOGY (L+P)	.LCR-N	. 25296.60.0/14.0	Ф	•	25296	60.0	.584
	•	DN	.ST-2D	SPACE TECHNOLOGY (L ←P)	LCR .	24532.60.0/14.0	200/ 200/ 55.0	• •	24532	60.0	•
27.	KSC	UP	-0A-1A	OFFICE OF APPLIC. (L&P)	,,,,,,,			***	27002	60.0	.583
, A		DN	•0A-1A	.OFFICE OF APPLIC. (L.+P)	P 4	۵۵	•		26138.	60.0	
28	KSC	UP	• •0A-1B	.OFFICE OF APPLIC. (L+P)	LCR-R	. 25407.60.0/14.C	. 18C/ 18C/ 55.C	6	25402	60.0	561
4	• •	ON .	.OA-18	OFFICE OF APPLIC. (L+P)	LCR .	• •	•	• • • • • • • • • • • • • • • • • • •	24538.	60.0.	· • • • • • • • • • • • • • • • • • • •
29	KŞC	uP.	SP-1A	_SPACE PROCESSING (L+P)	LCR-R	• •	° 180/ 180/ 28.5	• • • • • • • • • • • • • • • • • • •	* 26084.	60.0	499
4		DN .	• SP-1 A	SPACE PROCESSING (L+P)	• •	• •	180/ 180/ 28.5	•	25320	60.0.	•
30	KSC	UP .	: NN/D-16A	_EARTH OBSERVATION (L+P)			•	•	26502.	60.0	. 504
•		DN .	NN/D-16A	*EARTH OBSERVATION (L+P)	LCR .	. 25638.60.C/14.0	. 180/ 18C/ 28.5	•	?5638.	60.0.	•
31.	KSC .	UP.	NN/D-16B	ASTRONOMY (P)	LCR-N.	26798.45.0/14.6	. 162/ 162/ 28.5	•	26798	45.0	.489
•	•	DN 4	NN/D-16B	-ASTRONOHY (P)	LCR .	25166.45.0/14.0	162/ 162/ 28.5		25166	45.0.	
32.	KSC .	UP .	NN/D-16C	GPL 1 (L+P)	LCR-R.	26487.60.0/14.6.	200/ 200/ 28.5		26482	60.0.	.525
•	•	DN .	NN/D-16C	⊕GPL) (L+P) •	.LCP .	. 25718_6U.U/14.C.	200/ 200/ 28.5		25718.	60.0	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

							1 9 8 1						
FIT	LNC			•		PAYLOAD				ENERGY		E CARGO	SHUTTLE PERF
	SITE			CODE	NAME	TYPE	WEIGHT (LR)	L/D (FT/FT)	ORBIT HAVHP/INC (NMI/NMI/DEG)		WEIGHT (LB)		
3 30	KSC	•	UP .		•	•	•		•	ITUG	•	•	•
	•	•	DN .	• • • • • • • • • • • • • • • • • • • •	**************************************	+			• • • • • • • • • • • • • • • • • • •	.ITUG	•	• • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • •
34 D	.KSC	•	UP .		•	•	•	•	•	.ITUG	•	•	•
	- •	•	DN .		•	•	• •	•	• •	ITUG	•	•	•

						1982						
FLT	LNCH			P	CAGLYA	in Core Ellipse P.	<u>ाह्य ५ (८६४) वर्ष</u> ी एक ५८	Post for D			E CARGO	
NO	SITE	TRI	P. CODE	NAME	TYPE	WEIGHT (LR)			STAGE		LENGTH	PERF LOAD FACTOR
1	KSC	- UP	•PHY-1C	EXPLORER HIGH ALT. SPACE PROCESSING (P)	LCE-N	. 1725. 6171.	.10.4/ 6. 5.0/14.	.1. ESCAPE 0. 1ED/ 160/ 2	.ITUG 8.5.8-II	23675	58.9	. 377
•	•	. DN	-SP-18	SPACE PROCESSING (P)	LCR .	5239	5.U/14.	0 160/ 160/ 2	8.5.ITUG	11523	40.0	•
2	KSC .	UP	.NN/D-2A .NN/D-2A	.u.S. DOMCOMSAT	LCE-N.	1057	.]].]/ 7. .]].]/ 7.	G. SYNC.EG.	. ITUG	• 54846		. 873
		• DN	•	•				•	.ITUG	6284.	35.0	******
3.	KSC	• • UP	-NN/0-3 -NN/0-4	DISASTER WARNING SAT.	LCE-N	2054. 1422.	11.4/ 8. 12.5/10.	2- SYNC.EG. 3. SYNC.EG.	ITUG		58.9	.933
•		DN		•	•			•	.ITUG	6284	35.0.	· • • • • • • • • • • • • • • • • • • •
4 -	KSC	UP	•NN/D-5 •NN/D-9	.FOREIGN COMSAT .FOREIGN SYNC. METEOROL.	.CDR-N.	982. 807.	12.2/ 5 10.3/ 6.8	8. SYNC.EG. U. SYNC.EG.	ITUG	5393A	57.5	.858
		DN	•	•	• •	******	* * * * * * * * * * * * * * * * * * *	**************************************	-ITUG	6284	35.0.	******
5.	KSC	UP	.NN/0-10 .AST-1A	-GEOSYNC. OPERATIONAL MET -EXPLORER - LEO	CDR-N.	907. 649.	10.3/ 6.1 12.2/ 2.5	L. SYNC.EG. 5. 297/ 297/ 28	•ITUG	52574	57.5.	.836
•	•	DN		**************************************		•	******	•	TUS .	6284.	35.0.	*****

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1982	Control of the second						
FIT	LNCH			P	AYLOAD	errore to <u>the property of the</u>	e de Maria de Como de	di la la Aria (Aria) di Aria		E NE RG Y		E CARSO	SHUTTLE PERF
	SITE		COD€	NAME	TYPE	wEIGHT (LB)	L/D (FT/FT)	ORBIT HAZ		E		LENGTH (FT)	
6	KSC	•	•AST-6V •LS-1 •LS-1 •AST-5 •SP-18	LST REVISIT LIFE SCIENCES MODULE LIFE SCIENCES MODULE HEAO SPACE PROCESSING (P)	LCR-R. LCR-R.	682. 682. 17434.	13.0/ 2.2. 13.0/ 2.2. 17.5/14.0	34C/ 34 300/ 30 30C/ 30 200/ 20 34C/ 34	0/ 28.5 0/ 28.5 0/ 28.5	•	42131.	58.0	.750
		•	.AST-1A .AST-6V .AST-3 .SP-1B	-EXPLORER - LEO -LST REVISIT -SOLAR PHYSICS MISSION -SPACE PROCESSING (P)		3500. 4146.	5.0/14.0. 13.1/11.6.	297/ 29 34C/ 34 270/ 271 34U/ 34	0/ 28.5 3/ 28.5	•	. 16027.	39.8	•
7.	KSC	•	•AST-3 •ST-1 •SP-1C	.SOLAR PHYSICS MISSION .LONG DURATION EXP. FACSPACE PROCESSING (P)	.COR-R.	10201.				•	25948	58.1	573
		•	•LS-1 •LS-1 •SP-1C	LIFE SCIENCES MODULE LIFE SCIENCES MODULE SPACE PROCESSING (P)	LCR LCR LCR	656.	13.0/ 2.2.	300/ 30 300/ 30 270/ 27	7/ 29.5	•	8003	35,5	• • • • • • • • • • • • • • • • • • •
8.	WTR	-	•E0-38V •SP-18	.EARTH OBS. SAT. REVISIT				3007 300 3007 30			. 19713.	14.5	. 831
			-E0-3A -E0-3BV -SP-1B	.EARTH OBS. SATELLITE .EARTH OBS. SAT. REVISIT .SPACE PROCESSING (P)	.LCP .	3500.				•	17454	50.5	
9.	KSC	UΡ	.SP-1C	_SPACE PROCESSING (P)	LCR-R.	5121	5.U/14.C.	275/ 27	2/ 28.5		5121	5.0	343
			•ST-1 •SP-1¢	.LONG DURATION EXP. FACSPACE PROCESSING (P)				270/ 270 275/ 270			14389	40.5	

			<u> </u>	5 to 100	z zako a erre esta kartea de progresa	1982	के <mark>म्म क्षेत्र कर्मन्यः</mark> अपनीति । इत्यापादः च जनन	The state of the s	The second of the second			
FLT	E N CH		·	Р	AYLCAD	the manufacture of the state of	Table 1 Sept.	The Table 1 Company	- NEDCK		CARGO	SHUTTLE
	SITE	TRIP	CODE	NAME		AEIGHT (L8)		ORBIT HA/HP/INC (NMI/NMI/DEG)	ENERGY STAGE			PERF LOAD FACTOR
10	KSC	UP	-AST-10A	STELLAR ASTRONOMY (F)	LCR-R	31857	56.0/14.0.	162/ 162/ 28.5	•	31857	50.0	.548
		DN .		-STELLAR ASTRONOMY (P)	LCR .	30225.	.50.0/14.0.	162/ 162/ 28.5	• • • • • • • • • • • • • • • • • • •	30225	50.0	• • • • • • • • • • • • • • • • • • •
11.	KSC			-STELLAR ASTRONOMY (P) -SPACE PROCESSING (P)	LCR-N.	28526. 5121.	45.0/14.0. 5.0/14.C.	. 162/ 162/ 28.5 . 162/ 152/ 28.5	• • •	33647.	50.0	.569
	•			STELLAR ASTRONOMY (P) SPACE PROCESSING (P)				162/ 162/ 28.5 162/ 162/ 29.5		31087	50.0	•
12	-XSC	UP	AST-118 SP-18	-SOLAR PHYSICS (P) -SPACE PROCESSING (P)	LCR-N.	24771 6171	56.0/14.0. 5.0/14.0.	210/ 210/ 28.5 210/ 210/ 28.5		30942		-589
				SOLAR PHYSICS (P) SPACE PROCESSING (P)	LCR .	23039. 5239.	50.0/14.0. 5.0/14.0.	210/ 210/ 28.5 210/ 210/ 28.5	•	. 28278	55.0.	
13.	KSC			. HIGH ENERGY PHYSICS (P) HIGH ENERGY PHYSICS (P)			55.0/14.0.	120/ 120/ 28.5	:	31227	55.4	501
		DN .	PHY-6A PHY-6B	■HIGH ENERGY PHYSICS (P) • HIGH ENERGY PHYSICS (P)	LCP LCR	28242	55.0/14.6.	120/ 120/ 28.5		28242	\$ 5 .0.	
14.	KSC		SP-18	HIGH ENERGY PHYSICS (P) .SPACE PROCESSING (P) .SPACE PROCESSING (P)	.LC?-၉.	9371.	5.0/14.0.	120/ 120/ 55.0 120/ 126/ 55.0 120/ 120/ 55.0	•	34848	48.0.	-621
			SP-18	.HIGH ENERGY PHYSICS (P) .SPACE PROCESSING (P) .SPACE PROCESSING (P)	.LCR .	5239.	3.0717.54	1207 1207 55.0. 1207 1207 55.0. 1207 1207 55.0.	•	33912	40.0	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1982						.: <u>:</u>
FLT	LNCH		Barrier Brown	þ	AYLOAD	en en en en en en en en en en en en en e	THE STATE OF THE PARTY OF THE		ENERGY	_		SHUTTLE
_	SITE		CODE »			WEIGHT (LB)		ORBIT HAZHPZINC (NMIZNMIZDEG)			LENGTH (FT)	PERF LOAD FACTOR
15	KSC	•	• SP-1C	HIGH ENERGY PHYSICS (P) .SPACE PROCESSING (P) .SPACE PROCESSING (P) .SPACE PROCESSING (P)	.LCR-R.	5121. 5121.	5.0/14.0. 5.0/14.0.	. 120/ 120/ 28.5 . 120/ 120/ 28.5 . 120/ 120/ 28.5 . 120/ 120/ 28.5	•	36083	42.0	557
		•	•SP-1C •SP-1C	.HIGH ENERGY PHYSICS (P) .SPACE PROCESSING (P) .SPACE PROCESSING (P) .SPACE PROCESSING (P)	.LCR .	4189. 4189.	5.0/14.0. 5.0/14.0.	120/ 120/ 28.5 120/ 120/ 28.5 120/ 120/ 28.5 120/ 120/ 28.5		30705	42.0	· · · · · · · · · · · · · · · · · · ·
16.				_ATMOS. SPACE PHY. (L+P)						29002	60.0	. 555
•		DN 4	PHY-7A	ATHOS. SPACE PHY. (L+P)	LCR .	28238.	.60.0/14.0. •	200/ 200/ 28.5	• •	28239.	60.0	•
17.	KSC .	UP	LS-ZA7	LIFE SCIENCE (L)	LCR-R	37532.	58.5/14.6.	150/ 150/ 28.5	•	37532	58.5	.600
•	•	DN 4	LS-2A7	LIFE SCIENCE (L)	LCR .	30185.		150/ 150/ 28.5	•	30185	58.5	
18.	KSC .	UP	L S-2 A7	LIFE SCIENCE (L)	LCR-R.	37532.	58-5/14-0-	150/ 150/ 28.5	•	37532.	58.5.	.600
•	•	ON .	LS-2A7	LIFE SCIENCE (L)	LCR .	3018	58.5/14.0.	150/ 150/ 28.5	•	30185	58.5.	
19.	KSC -	UP .	ST-ZA	SPACE TECHNOLOGY (L+P)	LCR-R.	2529	50.0/14.C.	200/ 200/ 55.0	•	25296	60.0	.584
:	•	DN .	ST-2A	SPACE TECHNOLOGY (L+P)	LCR .	2453:.	EU.C/14.C.	200/ 200/ 55.0	•	24532.	60.0	
20.	(sc •	UP •	ST-28	SPACE TECHNOLOGY (L+P)	LCR-R.	25296.	5U.8/14.0.	2007 2007 55.8		25296.	60.0.	.584
•	:	DN .	ST-2B .	SPACE TECHNOLOGY (L+P)	.LCR .	24532.	60.0/14.0.	2007 2007 55.C		24532.	60.0.	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

		<u> </u>		The first of the second of the property of the second second of the second seco		1982					The state of the s	
FLT	LNCH		3 7	P	YLOAD				TNERGY		CARGO	SHUTTLE PERF
	SITE	TRIP	CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	OPBIT HAVMP/INC (NMI/NMI/OEG)				9
21	•			SPACE TECHNOLOGY (L+P) SPACE TECHNOLOGY (L+P)			60.0/14.0			25296		
22	• •			SPACE TECHNOLOGY (L+P) SPACE TECHNOLOGY (L+P)			.60.0/14.(.a			25296. 24532.		
23	•		• • • • • • • •	OFFICE OF APPLIC. (L+P)			66.0/14.0.	180/ 180/ 55.0		. 27052. . 25138.		
24	•			OFFICE OF APPLIC. (L+P) OFFICE OF APPLIC. (L+P)						25402. 24538.		
25	•	• • • • •		SPACE PROCESSING (L+P) SPACE PROCESSING (L+P)					• • • • • •	. 26084. . 25320.		•••••
26	•			_EARTH OBSERVATION (L+P) _EARTH OBSERVATION (L+P)						. 25638.		
27				ASTRONOMY (P) ASTRONOMY (P)				. 162/ 162/ 28.5 . 162/ 162/ 28.5		26798. 25168.		

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1982					<u> </u>	
FLT	LNCH		Service Control of the control of th		PAYLOAD	Augusta Andria			ENERGY		CARGO	SHUTTLE
NO	SITE	TRIP	COBE	NAME	TYPE	*EIGHT (LB)	L/D (FT/FT)	ORBIT HAVHP/INC (NMI/NMI/DEG)	STAGE	WEIGHT	LENGTH (FT)	LOAD
28	KSC	UP.	NN/D-16C		_LCR-R	26482	6U.0/14.d.	200/ 200/ 28.5	•	76482	60.0	.525
	•		NN/D-16C	=GPL 1 (L+P) •		25718	60.0/14.0	200/ 200/ 28.5	•	25718	50.C	
290	KSC		•	•	•		•		itug	•		•
ļ	•	. DN	• • • • • • • • • • • • • • • • • • •	•		•		• • • • • • • • • • • • • • • • • • • •	.ITUG	•		
3 GD	KSC	. UP	•	•	•				I T LG	•		•
		מם		•		•			Ilue	•		
31 D	KSC	UP		-			•		ITŅĢ			
	•	DN	•	•	•				.ITUG	•		
3 20	KSC	UP.	• •				•		ITUG	•		
		DN .		•	•		•		ITUG			· ·
33D	KSC			•	•				ITUG			
• •		DN	•	•	•	•	•		ITUG		•	
340	KSC				•	•	•		:TUG		•	•••••
•	•	DN		•	•		•		.ITUG .	· .	•	

		و می این در در در				1982					era. The majorations and the	entre e la la la
F) T	LNCH				CAGIY					SFUTTL		SHUTTLE PERF
		TRIP	C'O DE	NAME	TYPE	»EIGHT (LB)	L/D	ORBIT HAVEPVINC (NMIVNMIVDEG)			LENGTH	
35D.	KSC	UP .			•			•	.ITUG	•	•	•
	, ,	ON .			•			•	.ITUG .	•	•	•
360	KSC	UP .			•	•			.ITUG	5		•
		DN	•		•			e c e e e e e e e e e e e e e e e e e e	.TUG		•	•
3 7 D	KSC	UP .	•						. ITUG		•	
	•	DN			•	* * * * * * * * * * * * * * * * * * *			. I TUG	•	•	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

			The state of the s			1983	, to the second				·	
F	LNCH		4 . to	PA	YLOAD				ENERGY			SHUTTLE PERF
	SITE		CODE	NAME	TYPE	¥EIGHT (LB)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)			LENGTH	LOAD
2	*KSC	• UP		.EXPLORER HIGH ALTSPACE PROCESSING (P)	LCE-N	. 1225. . 6171.	10.4/ 6.1.	· ESCAPE 160/ 160/ 28.	5.8-II		58.9	.377
L	:	DN	-SP-18	SPACE PROCESSING (P)			5.0/14.0.	160/ 160/ 28.			40.0	
7	-KSC		.PL-10 .SP-18	-INNERPLANETARY FOLLOW-CN -SPACE PROCESSING (P)	LCE-N	2772	11.5/ 8.4. 5.0/14.0.	ESCAPE 160/ 160/ 28.	.ITUG 5.8-11	30305.	50.0	.482
	•	DN	•SP-18 •	SPACE PROCESSING (P)	-LCR	5239.	5.0/14.0.	160/ 160/ 28.		11523		
	**2C	UP	.PL-11	_VENUS RADAR MAPPER	LCE-N	13485.	19.4/14.7.	ESCAPE	-XTUG	48659.	54.4	774
	•	. DN		•	•		•			٥	. ο	
'	•			VENUS RADAR MAPPER	LCE-N.	13485	19.4/14.7.	ESCAPE	autx.	48659	54.4	. 774
	:	• DN		•	•	•	•		•		.0.	•
5		•	AST-1A					19323/19323/ 28. 297/ 297/ 28.	5.	43896	•	
	_	אס.	•	•	•		•			6284.		
6	.KSC			SEOS R AND D SPECIAL PURPOSE SAT.	.COR-N.	3085. 676.	11.0/ 7.4. 9.7/ 4.7.	SYNC.EQ.		59441.	55.7	-946
	•	DN	•	•	• •		•		.Itug	6284.	35.0.	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

	<u></u>	Mar v ar	200 <u>9 2</u> 3000			1983		A CONTRACTOR OF THE STATE OF TH			<u> </u>	
FLT	LNCH				YLOAD				FAFRG	p		SHUTTLE PERF
	SITE		CODE	NAME	TYPE	VEIGHT	L/0 (FT/FT)	ORBIT HA/HP.	VINC STAGE EG)	WEIGHT	LENGTH (FT)	LOAD
7.	KSC			TRACKING AND DATA FELAY SPACE PROCESSING (P)						57834	57.9	920
		DN	•SP-1B	•	LCP .	•	5.0/14.02	160/ 160/	28.5.ITUG	. 11523	40.0	* * * * * * * * * * * * * * * * * * *
8	KSC			. TRACKING AND DATA RELAY	.CDR-N.	9748		SYNC.EO. 160/ 160/		57834	57.9	920
		DN .	•	SPACE PROCESSING (P)				160/ 160/	•	•	-	•
9.	KSC			TRACKING AND DATA RELAY SPACE PROCESSING (P)						• 57934 •	. 57 _{.9}	• • •920
		DN	SP-18	SPACE PROCESSING (P)	LCR	5239。	5.0/14.0	160/ 160/	20.5.ITUG	. 11523	40.0	
10-	KSC 4	UP.	NN/D-1	_INTELSAT	.cor-n.	ยนุวค _.	12.2/ a.s.	SYNC.EQ.		. 5.1498	47.2	978
	•	DN .	•	•	، ، ب ب ب		to process 100 M Silvers and the second	How was a supported by the second	.ITUS -	6284	35.0	•
11	KSC a	UP.	NN/D+1	.intelsat	COR-N	4458	12.2/ 8.3.	SYNC.EG.	.ITUG	_ <1498	47.2	97A
		DN -	•	•			•	le en <u>opskala de de op</u>	.!1US •	6284	35.6	•
12	KSC			_U.S. DOMCOMSAT .TRAFFIC MANAGEMENT				SYNC.EQ. Sync.eg.	. 1 Tuc	. 55864	58.6	889
		DN	•	•					TTUC	6284	35.0	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

1.120	. 62 at 26 d	San an a street	##O wife of the second	North Allertin (1994) and San San San San San San San San San San	2 / Mary 1997	1983			<u> </u>	<u></u>		
FLT	LNCH		Principles (1)	P	YLOAD	fige tyrk oppose om op i					CARGO	
	SITE		CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)	ENERGY STAGE		LENGTH	PERF LOAD FACTOR
13	KSC	UP	-NN/D-5 -NN/D-10	FOREIGN COMSAT GEOSYNC. OPERATIONAL MET	.CDR-N.	982 807	12.2/ 5.8. 10.3/ 6.0.			53938	57.5.	.858
	•	. DN	•	•	•			************	ITUG	6284	35.0.	•••••
14	•	• • • • •	******	.GRAVITY/RELATIVITY SAT.	LCE-N	2514		500/ 500/ 90.0			25.9.	.983
	•	. DN	•	•	•	•	•			5499.	12.3.	
15	KSC	•	+LS-1 +LS-1 +AST-5V	→FOC. X RAY TELESCOPE LIFE SCIENCES MODULE LIFE SCIENCES MODULE HEAD REVISIT SPACE PROCESSING (P)	LCR-R. LCR-R.	682. 682.	13.0/ 2.2. 13.0/ 2.2. 5.0/14.0.	300/ 300/ 28.5.		39761	58.0.	.724
		•	.AST-5V	◆HEAO REVISIT	.CDR .	3500.	5.0/14.0.	340/ 340/ 28.5. 200/ 200/ 28.5. 270/ 270/ 28.5.		30278	50.8.	•••••
16	xsc			LARGE SPACE TELESCOPE SPACE PROCESSING (P)	CDR-R	20161. 6171.	36.3/12.0. 5.0/14.0.	340/ 340/ 28.5. 340/ 340/ 28.5.		39085.	45.8.	.716
			.LS-1	LIFE SCIENCES MODULE SPACE PROCESSING (P)	.LCR .	556. 5239.	13.0/ 2.2.	30C/ 30G/ 28.5. 30G/ 30G/ 28.5. 34C/ 34G/ 28.5.		9053	35.5.	• • • • • •
17.	WYR .			EARTH OBS. SATELLITE SPACE PROCESSING (P)	LCR-R.	863 <u>0</u> . 5121.	36.0/10.2. 5.0/14.C.	300/ 300/ 99.0. 300/ 300/ 99.0.	•	24012.	45.5.	.903
•	•	_		EARTH OBS. SATELLITE SPACE PROCESSING (P)	LCR LCR	6213. 4189.	36.0/10.2. 5.0/14.0.	300/ 300/ 99.0. 300/ 300/ 99.0.	•	12904.	45.5.	• • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

		obj. Rutiji	Park Carlos Services	and the property of the first of the second		1983	en de la colonia		a and the lite county		LA VINESZIFIS	September 1997
FLT	L N CH		18. 34. 18.	PI	YLOAD				CNEGGY	SHUTTLE		
	SITE			NAME	TYPE	LEIGHT	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)			LENGTH	LOAD
18	• WTR			SPACE PROCESSING (P) SPACE PROCESSING (F)				300/ 300/ 97.0 300/ 300/ 97.0		20283.	14.5.	824
		•	-SP-1C	LEARTH RESOURCES SAT. LSPACE PROCESSING (P) LSPACE PROCESSING (P)	LCR .	4189. 4189.	5.0/14.G. 5.0/14.O.	300/ 300/ 97.0 300/ 300/ 97.0 300/ 300/ 97.0	•	17093	50.5.	
19	wir .	0	- SP-1 C	.EARTH RESOURCES SAYSPACE PROCESSING (P) .SPACE PROCESSING (P)	.LCR-R.	5121 a	5.0/14.0.	30C/ 300/ 97.C 30C/ 30D/ 97.0 30C/ 30C/ 97.L	•	29947.	50.5	. 984
	6 (•	+ SP-1C	EARTH RESOURCES SAT. SPACE PROCESSING (P) SPACE PROCESSING (P)	LCR .	4189	5.0/14.0.	300/ 300/ 97.0 300/ 300/ 97.0 300/ 300/ 97.0	•	17093.	50.5.	*
20	.WTR	UP	•	•	:	· •	•		•		. ۵ .	419
	•	0		.VECTOR MAGNETOMETER SAT. .VECTOR MAGNETOMETER SAT. .VECTOR MAGNETOMETER SAT.	.LCR .	1080.	10.4/ 6.2.	216/ 216/ 90.0	•	3240.	31.2	
21	KSC .	UP	AGT-10A	STELLAR ASTRONOMY (P)	LCR-R	31857.	5G.0/14.0.	162/ 162/ 28.5	•	31857.	50.6	•54я
,		DN	•AST-1DA	STELLAR ASTRONOMY (P)	-LCR	30225.	50.0/14.L.	162/ 162/ 28.5	•	30225	50.0	•
22.	KSC	UP	-AST-1CB	STELLAR ASTRONOMY (P)	LCP-R.	28526.	45.C/14.O.	162/ 162/ 28.5	•	28526.	45.0.	509
		DN	-AST-108	-STELLAR ASTRONOMY (P)	LC?	26894.	45.0/14.6.	162/ 162/ 28.5		26894.	45.0	

- 1 ₂ - 1 ₂	A 11 - 11 - 12 - 13 - 14 - 14 - 14 - 14 - 14 - 14 - 14	<u>x</u>	and the Market Control of the Language Control	The state of the s	SATISTICS CONTRACTOR	1983	er er gester til er gjelder.		·			<u> </u>
£1.7	LNC		The Artifician Maria of Control o	P	CAOJYA	este en en en en en en en en en en en en en			ENERGY		CARGO	SHUTTLE
ΝO	SITE		CODE	NAME	TYPE	∦EIGHT (LB)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)		WEIGHT		
23	-KSC	UP	.AST-118	SOLAR PHYSICS (P)	LCR-R	24771	50.0/14.0	210/ 210/ 28.5	•	24771	50.0	.515
	•	. DN	-AST-118	SOLAR PHYSICS (P)	LCR	23639	50.0/14.5	. 210/ 210/ 28.5	•	23039	50.0	
24	KSC	• • UP	.AST-118	SOLAR PHYSICS (P)	LCR-R	24771.	50.0/14.0.	210/ 210/ 28.5	•	• • 24771.	50.0	.515
		. DN	_AST-11B	SOLAR PHYSICS (P)	LCR	23039	50.0/14.0	210/ 210/ 28.5	•	23039	50.0	
2 !	.KSC	. UP	.PHY-68	.HIGH ENERGY PHYSICS (P) .HIGH ENERGY PHYSICS (P)			55.0/14.0	. 120/ 120/ 28.5	•	31227	55.0	.501
	•	. DN		HIGH ENERGY PHYSICS (P) HIGH ENERGY PHYSICS (P)			55.0/14.0	120/ 120/ 20.5		28242	55.0	• • • • • • • • • • • • • • • • • • •
26	.KSC	••••		HIGH ENERGY PHYSICS (P)						22506		
\vdash	•		•	•	•		•		•	•		· ·
21	KSC	• • • •		-HIGH ENERGY PHYSICS (P) -HIGH ENERGY PHYSICS (P)				************		_ 20720. _ 18138.		• • • • • • •
28	VTR	. UP	.PH Y-7C	ATMOS. SPACE PHY. (L+P)	.LCR-N	2 900 <i>2</i>	60.0/14.0	. 180/ 180/ 90.0	•	29002.	60.0	.868
	•	• DN	•PHY-7C	ATMOS. SPACE PHY. (L+P)	LCR	28238	60.0/14.0	180/ 180/ 90.0	•	. 2823A	60.6	
29	KSC	UP	-LS-2A30	LIFE SCIENCE (L)	LCR-N	37532	58.5/14.0.	150/ 150/ 28.5	•	37532	58.5	.600
	•	. DN	-LS-2A30	•LIFE SCIENCE (L)	LCR .	30125	58.5/14.0-	151 / 150 / 26.5	•	30185.	58.5	•

						1983				-		
FLTI	LNCH		***	P	AYLOAD				ENFOGY	M - · - · - ·	E CARGO	SHUTTL
	SITE	TRIP	CODE	NAME		VEIGHT	L/O (FT/FT)	CREIT HA/HP/INC (NMI/NMI/DEG)	STAGE	м .	LENGTH	
30.	KSC .	UP .	LS-2A30	LIFE SCIENCE (L)	LCR-R	. 37532.	,	150/ 150/ 28.5	•	37532	58.5	.600
			•	LIFE SCIENCE (L)	•	• .	•	150/ 150/ 28.5	•	30185	•	• • • • • • • •
31.		, ,	•	SPACE TECHNOLOGY (L+P)		•		200/ 200/ 55.0	•	25296	•	.584
•		אם	ST-2A	SPACE TECHNOLOGY (L+P)	ø	•		1	• • • • • • • • • • • • • • • • • • •	24532	50.0	•
32.	KSC	UP .	ST-28	SPACE TECHNOLOGY (L+P)	LCR-R	•		200/ 200/ 55.0	•	25 29 6	£0.0	. 584
_		DN	57-28	SPACE TECHNOLOGY (L+P)	•	• .		•	•	24532	60.0	•••••• •
33.	K2C	UP .	ST-2C	SPACE TECHNOLOGY (L+P)	•	•		200/ 200/ 55.0	4	25296	0.0a	.584
		DN	ST-2C	SPACE TECHNOLOGY (L+P)	•LCR	24532	60.0/14.0.	20E/ 20E/ 55.C	• • • • • • • • • • • • • • • • • • •	24532	60.C	• • • • • • • • • •
34.	KSC -	UP	ST-20	SPACE TECHNOLOGY (L+P)	·LCR-R	25 <i>2</i> 96.	60.0/14.0.	200/ 200/ 55.D	•	25296	50.0	. 584
•		DN	ST-20	SPACE TECHNOLOGY (L+P)	-LCR	24532	60.0/14.0	2007 2007 55.0	• • • • • • • • • • • • • • • • • • •	24532	60.0	• .
35.	KSC .	UP .	0A-1A	OFFICE OF APPLIC. (L+P)	LCR-R	27002	60.0/14.0.	. 180/ 180/ 55.0	·	27002	FO.C	.583
_ :	•	DN	0A-1A	OFFICE OF APPLIC. (L+P)	LCR .	Z6138.	6U.6/14.C.	186/ 186/ 55.0	• • • • • • • •	26138	60.0	· · · · · · · · · · · · · · · · · · ·
36.	KSC .	UP .	0A-1B	• •OFFICE OF APPLIC• (L+P)	LCR-P	25402	.sc.c/14.6.	. 180/ 18C/ 55.U	•	. 25402.	. 60.C	.561
•	•	DN .	0A-18	OFFICE OF APPLIC. (L+P)	.LCR	24578	.60.0/14.C.	186/ 180/ 55.0	• • • • • • • • • • • • • • • • • • •	24538.	50.6	• • • • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1983						
C1 T	LNCH		Turk of the second	P /	YLOAD	The section of the se			ENERGY	SPUTTLE	CARGO	SHUTTL
		TRIP	CODE	NAME	TYPE	WEIGHT (LB)	L/0 (FT/FT)	ORBIT HAZHPZINC (NMIZNMIZDEG)		VEIGHT		
37	KSC	• • UP	-SP-1 A	SPACE PROCESSING (L+P)	LCR-R	26084	60.0/14.0.	180/ 180/ 28.		26084	FO.0.	499
	•	DN	.SP-]A	SPACE PROCESSING (L+P)	LCR	25320	60.0/14.0	180/ 180/ 28.	5.	25320	60.0	
	W TR	UP	NN/D-16A	*EARTH OBSERVATION (L+P)	LCR-N	26502	60.0/14.0	180/ 180/ 90.0	•	26502	60.0.	.824
			. NN/D-16A	_EARTH OBSERVATION (L+P)		25638	.60.D/14.D.	180/ 180/ 90.	J.	25638	60.0	
39	KSC	_ UP	• NN/D-168	-ASTRONOHY (P)	LCR-R	25798	45.0/14.0	162/ 162/ 28.		26798.	45.0	48
		_	-	ASTRONOMY (P)	-LCR		.45.0/14.C.	162/ 162/ 28.	5.	25166	45.0.	
40.	KSC	• UP	NN/D-16C	-GPL 1 (L+P)	LCP-R	26482	.60.0/14.0.	200/ 200/ 28.	•	26482	60.6	.52
•		- DN	. NN/D-16C	-GPL] (L+P)	-LCR	25718	.60.0/14.0	200/ 200/ 28.	5.	25719	60.0	•
41.	KSC	• UP	NN/D-16D	•GPL 2 (L+P)	.LCR-N.	26261	60.0/14.0.	2007 2007 28.	•	. 26261.	60.0.	.52
	•	. DN	• NN/D-16D	_GPL 2 (L+P)	.LCR	25497	.60.D/14.0.	201/ 200/ 28.	5 .	25497	60.0	•
20	WTR	UP	•	•	• •		• •	· · ·	•			•
•		. DN	• • • • • • • • • • • • • • • • • • •	•	•	•	•	• • • • • • • • • • • • • • • • • • • •	•.			•
30	YTR .	. UP	•	•	•				ITUG		•	
•		DN			•	,	• • • • • • • • • • • • • • • • • • •	******	.ITUE	•	••••••	•••••

				70	COMP TO SERVICE	1983	ଅଧିକ୍ରିଟି ନିର୍ମ୍ଭିତ ଅଧିକ୍ରୀ _କ ୃତ୍ୟୁକ୍ତ ।			145 N. 179		
FLT	LNCH				YLOAD				ENERGY			SHUTTLE PERF
		TRIP	CODE	NAME	TYPE	*EIGHT (LB)	\ L/D	CRBIT HA/HP/INC (NMI/NMI/DEG)	STAGE	WEIGHT	LENGTH	
44 D	WTR	. UP .				•		•		•		
		DN .				a .				•		9
4 5D.	WTR	UP.				*			. I TUG			
e e e e e e e e e e e e e e e e e e e		DN .	,			•	•		.ITU5	•	•	•
46D	KSC	UP					,		.ITUG			
	•	DN .			- : • • • • • • •			* * * * * * * * * * * * * * * * * * *	.TTUG		, , , , , , , , , , , , , , , , , , ,	
4 7D.	KSC	UP .			•				ITUG			4 +
•		DN .	•					· · · · · · · · · · · · · · · · · · ·	ttue	*'d * a a a a a a		
480	KSC	UP	•	•	•	•			.ITUG		•	•
•	•	DN .	· • • • • • • • • • • • • • • • • • • •	, 4	• • • • • • •	• • • • • • •		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.ITU6	•		• • • • • • • • • • • • • • • • • • •
4 90.	KSC	UP .		· · · · · · · · · · · · · · · · · · ·	•	· · · · · · · · · · · · · · · · · · ·			. ITUS	•	•	
•	•	DN .	•	••••••••••••••••••••••••••••••••••••••	, ,	•		· • • • • • • • • • • • • • • • • • • •	ITUG	•		• • • • • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

7.1	·····				· · · · · · · · · · · · · · · · · · ·	1983			<u> </u>		· • • · · ·	·
			<u> </u>	P A	YLOAD				THEO CY	SPUTTLE		SHUTTLE PERF
FL T	LNCH	TRIP	CODE	NAME	TYPE	VEIGHT (LB)	L/D (FT/FT)	ORBIT HAVHPVINC (NMIVNMI/DEG)	ENERGY STAGE	VEIGHT	LENGTH	LOAD FACTOR
50 D		UP			•	•		• •	.ITUG	•	•	•
•	•	DN .	•	•	• • • • • • • •	• • • • •		· · · · · · · · · · · · · · · · · · ·	ITUG	•	•	• •
5 I D	WTR	UP .	•	•	•			•	.ITUG	•		•
		. DN		•	•				.ITUG	• • • • • • •		· · · · · · · · · · · · · · · · · · ·
52D		UP .		•	•		•		.ITUG	•	•	•
•	•	. DN	•	- • • • • • • • • • • • • • • • • • • •	- - 	•		, , , , , , , , , , , , , , , , , , ,	.ITUG	•	•	• • • • • • • • •
6 70		· UP	•	•	•		•	•	• • I T U G			•
,		DN .	•	•	• ••••• •		, , , , , , , , , , , , , , , , , , ,		.ITUG		•	- • • • • • • • •
54 D		UP .	•	•	•	• •		•	• •ITUG	•	•	•
		DN		•	•			•	iTUG	•		•
5 5 D		UP		•	•	•			. I TUG			•
•		DN .		•	•				.ITUG	• .		• •

					ready 27 Calc.	1983		Pirk I registro (Alexandro)	CONTRACTOR		TOTAL SEA SEA	
FI T	LNCH				YLOAD					SHUTTLI		SHUTTLE PERF
NO	SITE	TRIP	CODE			WEIGHT		ORBIT HA/HP/INC (NMI/NMI/DES)	STAGE	WEIGHT	LENGTH (FT)	LOAD
56D	KZC	UP .	0		0	•		1	.IYUG	•	•	•
	9 9	DN .			•	•		.	.ITUG	•	•	•
5 70	KSC	. UP			•	•		•	. I TUG	•		•
	•	DN .				•		•	.1706	•	•	
580	. WTR	uP .			•	4			. I T U G	•	•	•
	•	DN .			• • • • • •			• • • • • • • • • • • • • • • • • • •	.ITUG	*		
590	.xsc	. UP .	•		• .	a a a a a a a a a a a a a a a a a a a		୍ତି ଓ ପ୍ରତ୍ତିକ <u>ିକ୍ର</u> ଣ ହେଇ ଅଟିକ ବିଶ୍ୱର କ ରିଥିଲି । ସମ୍ପର୍ଶ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଶ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଶ କରିଥିଲି । ସମ୍ପର୍ଶ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ୟ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ଭର କରିଥିଲି । ସମ୍ପର କରିଥିଲି । ସମ୍ବର କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ୍ପର୍ଣ କରିଥିଲି । ସମ	.ITUG	•	•	0
	•	DN .		, a a a a u u u u a a a a a a a a a a a	•			• • • • • • • • • • • • • • • • • • •	TTUG			•
6 0D	KSC	. UP	•	•	•	• • • • • • • • • • • • • • • • • • •	***	•	.1100	*	•	•
,	•	. ON	•	••••••••••••••••••••••••••••••••••••••	• • • • • • • • • • • • • • • • • • •	•			.ITUG	•	•	•
e i D	WTR	ี บค		•	•	•	<u></u>	·	•	•	•	•
	•	DΝ		••••••••••••••••••••••••••••••••••••••	•	-			•	•	•	•
6 20	VTR	UP .	• •		•	•		Harris II.	•	•	•	•
		DN -	•		•		•	, , , , , , , , , , , , , , , , , , ,	• • • • • • • • • • • • • • • • • • •	• • • • • • • • •	•	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

<u>*</u>				·ــــــــــــــــــــــــــــــــــــ	1983	· · · · · · · · · · · · · · · · · · ·		· · · · · ·	1, 11 · · · · · · · · · · · · · · · · ·	
FLT LNCH		** + . <u></u> *	PA	TLOAD	, ,		· · · · · · · · · · · · · · · · · · ·	E1606#	SHUTTLE CARGO	SHUTTLE PERF
NO SITE	TRIP	CODE	NAME	TYPE	WEIGHT (LR)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)	STAGE		LOAD
63D.¥TR	UP		•					•	*	•
•	. DN .		•	•	•	•	•	•		•
64D. WTR	UP .		•	•			•	•		•
•	. DN .	•	•	•		•	•	•	•	
6 50. WTR	UP.	•		•			•	•	•	•
•	. DN .	•	• : •	•			•	•	•	•
66D. WTR	. UP	-		•			•	•		
:	. DN .	-	-	•		•	•	•	•	•
57D. WTR	. UP .		·				•		•	•
•	. DN	•		•		•	•			•
8D. WTR	UP	•	•	•		•		•	•	•
•	. DN .	4				•		•	•	•

					يجيك فكرا أأن أوالا	1994	gapatan kang kang pang panggan Sang A	The The Total Medical of control Street	PARTY COLOR	The water of the same of the s	en en egente en en en en en en en en en en en en en	
FLT	LNCH		er til en som en er er er er er er er er er er er er er		DAOLYA				AT NE RG		CARSO SHUTT	TLE
	SITE	TRIP	CODE	N AM E	TYPE	WEIGHT (LA)	(FT/FT)	ORBIT HAVHPVINC	STAGE	WEIGHT	ENGTH LOAD (FT) FACT(
1	.KSC	UP	.PL-20	PIONEER JUPITER PROBE	CDE-N	1169	10.5/10.0	ESCAPE	106 .3-11		54.083	39
	•	DN	•	•	•	• • • • • • •	, , , , , , , , , , , , , , , , , , ,		.TUG	6297.	35.0.	• • • i
2	.KSC	• • UP	.PL-20	PIONEER JUPITER PR(BE	-CDE-N	1169	0	•	•106 •3-11		54.095	5.8
,	•	ON.	*	*	•				.TUG	6237.	35.0.	•••
	•	DN	-AST-1B	-EXPLORER - LEO -EXPLORER - SYNCEXPLORER MEDIUM ALT.		640	.12.2/ 2.6.	. 297/ 297/28.1 19323/19323/ 28.5 20000/ 1000/ 28.5	.TLG		47.26	87
4	.wTR		•€0-5C •SP-1B	SPECIAL PURPOSE SAT. SPACE PROCESSING (P)				280/ 280/ 90.0		16167	49.74	76
	• •			EXPLORER UPPER ATMOS. SPACE PROCESSING (P)				. 1900/ 140/ 98.0 . 160/ 160/ 96.0		12582.	53.3.	***
5	. WTR			EXPLORER UPPER ATMOS. SPACE PROCESSING (P)			• •	. 1900/ 140/ 90.0		25870	53.37	62
·	•		-E0-6 -SP-1B	TIROS N-P SPACE PROCESSING (P)			• • • • • • • • • • • • • • • • • • • •	. 7907 7907102.0 . 1607 1607 90.0		13159.	55.3.	
6	.KSC	UP	• PH Y-18	EXPLORER MEDIUM ALT.	• •C02-3	• =57.	12.7/ 5.0.	25":::/ 135::/ 24.5	.116	. coggo.	47,19	41
	•	אם	-PHY-3A	_ENVIRON. PERTUR. SAT.	-CER	3505	.15.8/ 7.5	. 85117 89007 55.0	193	. 9885.	59.8.	

	y Silvery and the	\$ JF - 28-	, bega en 11 gent e	The second of th	الباد من المسار النبطيلي	1984		<u> </u>				, e
		r grygere ach	୍ଦିୟର ଅଟେ ଅନ୍ତର୍ଶ୍ୱର ଓ ଅଟି ଓ	•••	YLOAD	o de 1920 animest.		2 - St 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	ENERGY		E CARGO	SHUTTLE.
	LNCH SITE			NAME		¥EIGH₹ (LB)	L/D (FT/FT)	ORBIT HAZHPZ (NMIZNMIZDE	INC STAGE		LENGTH	
		-	.PHY-3A .SP-18					. 16E/ 16C/		38202	55.8	.692
	•	. DN	.SP-18	SPACE PROCESSING (P)	LCR	5239	5.0/14.0	160/ 160/	55.0.TLG	11536	40.0	
. 8	.KSC	. UP	.PL-7	MARS SURF. SAMP. RETURN	.LCE-N	10640	.23.5/14.7.	ESCAPE	.tus	52517	58.5	. 995
		. DN	·	•	•		•	•	.TLG	62917	. 35.0	•
ģ	-KSC	UP	-PL-7	_MARS SURF. SAMP. RETURN	LCE-N	10540	23.5/14.7	. ESCAPE	.715	62517	58.5	995
	•	. DN	•	•	•	•		· ·	.TUG	6297	35.0	•
10	.KSC		•L UN - 2 • SP - 1 B	- AUTO. LUNAR ORBITER -SPACE PROCESSING (P)	.LCE-N .LCR-R	2475 5171	-11-2/ 7-8. - 5-0/14-0	ESCAPE 160/		. 42491·	51.2	.676
	•	DN	-SP-1B	SPACE PROCESSING (P)	LCR.	5239	5.0/14.0	160/ 160/	28.5.TUG	11536	40.0	•
11	KSC	UP	-NN/D-1 -NN/D-4				.12.2/ 8.3. .12.5/10.3	SYNC.EG.	†tG	. F2180	59.7	989
	•	-	•E0P-9 •LS-1	MAGNETIC MONITOR SAT. LIFE SCIENCES MODULE	LCR LCR	815 656	.10.2/ 5.8. .13.0/ 2.2	1080/ 540/ 300/ 300/		7768	58.2	
12	.KSC	· UP	-NN/D-1	INTELSAT	.CDR-N	4498	12.2/ 8.3	SYNC.E0.	.TLG	. 59E4P	47.2	949
	•	. DN	NN/0-5	FOREIGN COMSAT	-CER	830	12.2/ 5.8	SYNC.EG.	.TUG	7127	47.2	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1984						
F1 T	LNCH			FA	YLOAD	1. J. 125 306			CHERKY	SPUTTLE		
	SITE		CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	ORBIT HAZPPZINC (NMIZNMIZDEG)			LENGTH	PERF LOAD FACTOR
13-	KSC	UP	•NN/D-3 •NN/D-5				12.2/ 8.3. 12.2/ 5.8		. TLG	62248	59.4	. 990
		DN	-NN/D-5	FOREISN COMSAT	CDR	830	12.2/ 5.8.	SYNC.EQ.	TLG	7127	47.2	•
14.	KSC	ሆ ^ዎ	-NN/D-28	_U.S. DOMCOMSAT	.CDR~N.	4498	.12.2/ 8.3	SYNC.EG.	.TUG	5954A	47.2	. 949
		DN	•NN/D-5	_FOREIGN COMSAT	CDR	630	12.2/ 5.8	SYNC.EG.	.TLG	7127	47.2	• • • • • • • • • • • • • • • • • • •
15.	WTR	UP	•	•					.TUS	9467.	35.0	352
•		DN .	•NN/D-8 •NN/D-8	-ENVIRONMENTAL MON. SATENVIRONMENTAL MON. SAT	LCR .	1899.	12.4/1C.2. 12.4/1C.2.	920/ 920/103.0 920/ 920/103.0	.TUG	10095	59.8	•
16-	WTR	UP	.SP-1B	SPACE PROCESSING (P)	LCF-R	6171	5-0/14.0.	. JEC/ 166/163.0	TUG	15248	49.C	567
•		DN	-NN/D-8 -SP-18	-ENVIRONMENTAL MON. SAT. -SPACE PROCESSING (P)	FCS •	1899. 5239.	12.4/10.2. 5.0/14.C.	, 920/ 920/103.C , 16C/ 16C/1c3.C	.TLG	_ 13435.	52.4	• •
17.	KSC -	UΡ	•LS-1	LIFE SCIENCES MODULE	LCR-R.	682	13.0/ 2.2	300/ 300/ 28.5	TLG	. 5217E	48.0	.830
:				FOREIGN SYNC. METECROLGEOSYNC. OPERATIONAL MET			10.3/ 6.0. 10.3/ 6.0.		-TUG	7927	°5.6.	• • • • • • • • • •
18.	KSC .		• •NN/D-9 •LS-1	.FOREIGN SYNC. METEOROL. .LIFE SCIENCES MODULE				SYNC.EG. 3CT/ 3CC/ 28.5		54341	58.3	865
•	•			-GEOSYNC. CPEPATIONAL METGEOSYNC. OPERATIONAL MET.			16.27 6.0. 16.37 8.8.		TU6 .	7827	55.6	· • • • • • • • • • • • • • • • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

	, de Grejon	T. S. Trayer	activities of the control of the con	enterente de la companya de la companya de la companya de la companya de la companya de la companya de la comp		1984	JWANTEST	s in the state of the section of the	The state of the s			
E) T	LNCH	To the second	e to <u>u</u> des tout to a comment		AYLOAO			Samueland (<u>Campado</u> , esc. <u>- 1</u> 000 de	i		CARSO	
	SITE		CODE	NAME	TYPE		L/D (FT/FT)	ORBIT HA/HP/INC (NYI/NMI/DEG)	E NE RG Y ST AGE		LENGTH	PERF LOAD FACTOR
19	KSC	•		.LST REVISIT .FOC. X RAY REVISIT .LONG DURATION EXP. FAC.	CDR-R CDR-N	3500	5.0/14.0. 5.0/14.0. 35.5/14.0.	270/ 270/ 28.5	•	27731	50.0	.592
		•	-LS-1 -AST-3	LIST REVISIT LIFE SCIENCES MODULE SOLAR PHYSICS MISSION FOC. X RAY REVISIT	•LCR	. 656. 4146.	13.0/ 2.2. 13.1/11.6.	340/ 340/ 28.5 300/ 300/ 28.5 270/ 270/ 29.5 270/ 270/ 28.5	•	14304	40.6	
20	WTR .	•	+SP-1B	.EARTH OBS. SAT. REVISIT .SPACE PROCESSING (P) .SPACE PROCESSING (P)	.LCR-R.	6171.	5.0/14.0. 5.0/14.0. 5.0/14.0.	300/ 300/ 99.0	•	2527:7	19.5	.925
		•	• SP-18	LEARTH OBS. SAT. REVISIT SPACE PROCESSING (P) SPACE PROCESSING (P)	.LCR .	5239	5.0/14.0. 5.0/14.0. 5.0/14.0.	300/ 300/ 99.0		15430	19.5	
21	WTR		+ SP - 1 C	.EARTH RESOURCES SATSPACE PROCESSING (P) .SPACE PROCESSING (P)	-LCR-R.	5121.	5.0/14.0.	300/ 300/ 97.0 300/ 300/ 97.0 300/ 300/ 97.0	•	29940	50.5	.984
•			SP-1C	EARTH RESOURCES SAT, SPACE PROCESSING (P) SPACE PROCESSING (P)	.LCR .	4199.		300/ 300/ 97.0 300/ 300/ 97.0 300/ 300/ 97.0		17093	50.5.	****
22.				SOLAR PHYSICS MISSION LONG DURATION EXP. FAC.				270/ 270/ 28.5. 270/ 270/ 28.5.		4281 10290		
23.	•	·						162/ 162/ 28.5		30811	•	√ 2 20 - 24
•	•	DN		STELLAR ASTRONOMY (P)	LCR .	29179.	30.0/14.G.	162/ 162/ 28.5		29179	39.0.	•••••

			· · · · ·			1984	H 31 - 35	Barangan (1994) and the second of the second			· · ·	
FL T	L N PU			P.	YLOAD	12	A Military to the second of the	and the second of the second o	CHEDEA			SHUTTLE PERF
		TRIP	CODE	NAME	TYPE	*EIGHT	L/D (FT/FT)	CRPIT HAVHPVINC (NMIVNMIVDEG)		LEIGHT.	LENGTH	LOAD
24.	KSC .			STELL AR ASTRONOMY P) SPACE PROCESSING (F)				162/ 162/ 28.5 162/ 162/ 28.5		32408.	52.6	554
•		•		STELLAR ASTRONOMY (P) SPACE PROCESSING (P)			5.0/14.0.	. 162/ 162/ 28.5 . 162/ 162/ 28.5		29844.	52.0	•
25•	KSC .			-STELLAR ASTRONOMY (P) -SPACE PROCESSING (P)				. 162/ 162/ 28.5 162/ 162/ 28.5		30581	45.L	. 532
				_STELLAR ASTRONOMY (P) _SPACE PROCESSING (P) -				162/ 162/ 28.5 162/ 162/ 28.5		28017.	45.C	•
26-	KSC .			SOLAR PHYSICS (P) SPACE PROCESSING (P)				. 210/ 210/ 28.5 . 210/ 210/ 28.5		79892		.576
•				SOLAR PHYSICS (P) SPACE PROCESSING (F)				210/ 210/ 28.5 210/ 210/ 28.5		27228.	55.0	•
27.		• • • • •	•••••	SOLAR PHYSICS (P)	• • • • • •			. 210/ 210/ 28.5 . 210/ 210/ 28.5		24771.		
28+	KSC .			HIGH ENERGY PHYSICS (P) HIGH ENERGY PHYSICS (P)			55.8/14.0	120/ 120/ 28.5	•	31727	55.6	561
•	•			HIGH ENERGY PHYSICS (P) HIGH ENERGY PHYSICS (P)			55.6/14.6	120/ 120/ 28.5	4	28242.	55.0	• • • • • • • • • • • • • • • • • • •
29.1				HIGH ENERGY PHYSICS (P)						. 225CF.		
•		. UN	• P H T - G C .	• Fulon saskes messing (a)		25434	,	, 120/ 120/ 25.0	•	- 234345	,0 <u>,</u> 0,	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

			· · · · · · · · · · · · · · · · · · ·			1984			·			•	
	LNCH			ρ	AYLOAD	Mark The Aut 1992 - 19	×			. = 0	SPUTTLI	E CARGO	
N O	SITE	TRIP	CODE	NAME	TYPE	- (LB)	L/D (FT/FT)	ORBIT HA/HP (NMI/NMI/O	/INC ST	IERGY TAGE	WEIGHT (LB)	LENGTH.	PERF LOAD Factor
30	KSC .	UP.	PH Y-607	HIGH ENERGY PHYSICS (P)	-LCR-R	20720	27.0/14.0	120/ 120/	28.5.	•	20720	27.0.	.379
	s ,	DN .	PHY-607	HIGH ENERGY PHYSICS (P)	-LCR	18138	-27.0/14.G.	120/ 120/	28.5.	•	18138	27.0.	•••••
31	KSC	UP	PHY-78	.ATHOS. SPACE PHY. (L+P)	.LCR-N	. 29002	60.C/]4.C	200/ 200/	55.0.		29002	50.0.	.635
•	,	DN .	PHY-78	ATHOS. SPACE PHY. (L+P)	-LCR	28238	€D.0/14.0	200/ 200/	55.0.	• • • • •	28239.	60.0.	*****
32.	YTR .	UP	PH Y-7C	. ATMOS. SPACE PHY. (L+P)	.LCR-R	. 29002.	60.0/14.0	. 180/ 180/	90.0.	•	29002.	60.0.	.868
•	•	DN .	PHY-7C	ATMOS. SPACE PHY. (L+P)	.LCR	28238	60.0/14.0	186/ 180/	90.0.	•	28238.	60.0.	•••••
33.	WTR	UP	PH Y-7C	. ATMOS. SPACE PHY. (L.P)	LCR-R	29002	60.0/14.0.	180/ 180/	98.0.	•	29002	60.0.	.868
•	•	DN .	PHY-7C	-ATMOS. SPACE PHY. (L+P)	-LCR	28238	60.0/14.0.	180/ 180/	90.6.	• • • • •	28238.		
34	KSC :	UP _	LS-2A30	LIFE SCIENCE (L)	• LCR−R	37532.	58.5/14.0.	150/ 150/	28.5.	•	37532.	58.5.	.600
•	•	DN .	LS-2430 .	LIFE SCIENCE (L)	.LCR	30185.	58.5/14.0.	150/ 150/	28.5.	••••• •	30185.	58.5.	•••••
35.	KSC .	UP =	LS-2A30 .	LIFE SCIENCE (L)	LCR-R	37532	58.5/14.0.	150/ 150/	28.5.	•	37532.	58.5.	.600
. •	•	DN -	LS-2A30 .	LIFE SCIENCE (L)	LCR .	30185.	58.5/14.0.	J5C/ 150/	28.5.	• • • • •	30185.	• • • • • • • •	• • • • • •
36-1	ksc .	UP -	AS-TZ	SPACE TECHNOLOGY (L+P)	LCR-R	25296	60.0/14.0.	200/ 200/	55.0.	٠	25296.	60.0.	.584
•	•	DN .	57-2A	SPACE TECHNOLOGY (L+P)	LCR	24532.	60.0/14.0.	2007 2007	55.0.	-	24532.	60.0.	• • • • • •

						1984	-					
FI I	ו ארם			þ	AYLCAD		Land Section Clay 1975 and 19	 All Control of the Cont		SHUTTLE	1	
1	SITE	TRIP	CODE	NAME	1 Y DE	¥EISHT (LB)	(FT/FT)	OFBIT HAVEFVING (NMIVNMIVDEG)	ENERGY STAGE		LENGTH	PERF LOAD FACTOR
37.	KSC	UP	-ST-28	SPACE TECHNOLOGY (L+P)	LCR-R	•		,	•	25 29 6	60.0	. 584
,		DN	•ST-28	-SPACE TECHNOLOGY (L+P)	.LCR	• ,	•	ZUC/ 200/ 55.6	•	24532.	6 0. D.	
38	KSC	UP	.sr-zc	SPACE TECHNOLOGY (L+P)	•LC∺-¤	-			•	25296	EG.O.	.584
		DN	•ST-2C	SPACE TECHNOLOGY (L+P)	a	• .		2GC/ 2UC/ 55.C	•	24532	60.G	
39	KSC	UP	-ST-20	.SPACE TECHNOLOGY (L+P)	•	•	•		•	2529F	60.0	584
	•	DN	•ST-ZD	-SPACE TECHNOLOGY (L+P)	.LCR	_ 24532. •	60.U/14.C	. 2LC/ 200/ 55.C	•	24532	60.0	
40	WTR .	UP	.0A-1A	OFFICE OF APPLIC. (L+P)	.LCP-N	27002	60.C/]4.C.	. 160/ 160/ 90.0	•	77002.	F0.C.	.803
4	•	DN	+0A-1A	*OFFICE OF APPLIC. (L+P)	•LCR	. 26138. •	.60.0/14.L.	160/ 160/ 90.0	•	26133	€0.0	
41	KSC	UP	0A-18	OFFICE OF APPLIC. (L+P)	LCR-R	25402.	60.0/14.0	180/ 180/ 55.0	•	25402	FG.C.	.561
		DN	.0A-18	*OFFICE OF APPLIC. (L+P)	•LCR	. 2453E.	.6C.U/14.L.	1867 1867 55.C	-	. ?4539.	50.0	
42	KSC .	UP.	SP-1A	SPACE PROCESSING (L+P)	-LC3->	26034.	50.0/14.0.	180/ 180/ 28.5	•	26084.	£0.0.	.499
•	•	DN .	.SP-1A	SPACE PROCESSING (L+P)	•1.(. 2532L.	.66.0/14.D.	1807 1807 28.1	•	25320.	60.0	
43.	WTR .	UP	NN/D-16A	-EARTH OBSERVATION (L+P)	LC?-3	25502	50.0/14.0.	. 1.00 \ 1807 \ 90.1.	•	. 26502.	FO.L.	.924
•		DN .	NN/D-16A	*EARTH OBSERVATION (L+P)	-LCR	25638	.6L.U/14.C.	1867 1867 96.6		25639.	60.0.	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

V C A N	7.7 <u>8</u> -		www		4. SHUTTLI		5 111 (141 · ES1					<u>:</u>
	<u> 1850 - 1860 - 18</u>	11-12-14 W.	Service		TO SEE THE SEE SEE	1984	<u> </u>	·	· · · · · · · · · · · · · · · · · · ·			
	LNCH				PAYLOAD				ENERGY		CARGO	SHUTTLE PERF
N G	SITE	TRIP	CODE	NAME	TYPE	VEIGHT (LB)	L/D (FT/FT)	CRBIT HA/HP/INC (NMI/NMI/DEG)	STAGE		LENGTH (FT)	LOAD
44.	KSC	UP	• NN/D-16B	ASTRONOMY (P)	_LCR-R	26798.	.45.0/14.0.	162/ 162/ 28.5	•	26798	45.C	488
	•		• NN/D-16B •	■ASTRONOMY (P)			45.0/14.0.	162/ 162/ 28.5		25166		
45	KSC	. UP	- NN/D-16C		LCR-R.	26482	60.0/14.0.	200/ 200/ 28.5	•	26482	60.0	.525
		- DN	. NN/D-16C	#GPL 1 (L+P)	.LCR .	25718.	60.0/14.6.	200/ 200/ 28.5	•	25718		•
46D	.WTR	UP	•	•	• •		•			• •		
		ÐN		•			•	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • •	•		· • • • • • • • • • • • • • • • • • • •
4 70	VTR	UP	•	•		•	•		TLG			•
		DN	• • • • • • • • • • • • • • • • • • •	•	• •	• • • • • •	•		TUG	• • • • • • •		
48D	.WTR	up.	•	•	• •				•			
•	•	DN	• • • • • • • • • • • • • • • • • • •	•				• • • • • • • • • • • • • • • • • • • •	•	· · · · · · · · · · · · · · · · · · ·	• • • • • •	•
4 9D	WTR .	UP.	•	:	: :	•	•		TLG .	• •	•	· · · · · · · · · · · · · · · · · · ·
•		DN	•			•	•		TUG	•	••••••	
5 C D •	KSC			•		•	•		TLG .		•	
•	•	DN		•	• • •	• •••••••	•		TLG .	•	• • • • • • • •	******
•	•	•	•	•		•			·		•	

	:1			(##)	<u> </u>	3 984				278 1 2 1 1 1 1		
FLT	LNCH			B**	PAYLO	CA		L Leaves	A C N E D G V	SHUTTL	E CARGO	SHUTTLE PERF
		TRIP	CODE	N AME		PE _WEISHT . (LB)	L/D (FT/FT)	ORBIT HAVHP/INC (NMI/NMI/DEG)	STAGE	⊌∏IGHT (LB)	LENGTH	
510	ĸsc	UP						•	. TLG	•	•	*
	a (DN .	• • • • • • • • • • • • • • • • • • •		•		estino di la composito de la composito de la composito de la composito de la composito de la composito de la co		.TLG		•	•
5 2 D	KSC	UP		• • • • • • • • • • • • • • • • • • •				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	. TL6	•	•	
•	•	DN .	•		•	• •		o.	•TUG	•	•	•
53D	KSC	UP			* •				TUG	*	•	•
	• •	DN			•		1 d 4 d 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	,	TU 6	•	•	
54D		UP			•	• • • • • • • • • • • •	, , , , , , , , , , , , , , , , , , , ,	- 	.TU6	• •	•	*
		DN	•	• •	•	•		r Companya of the company	.tus •	•	•	•
550	ķsc	UP				-			.Tus			•
		DN	•	• ·	• •	The state of the s	·		.⊺บธ์ •	•		•
56D	KSC	UP .		, , , , , , , , , , , , , , , , , , , ,	• •				_Tug	• •	•	•
		DN -	•		•	•		•	•*US •	•		•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1984			****			,
FLT	LNCH			PA	YLGAD	****			SUSSEX	SHUTTLE		SHUTTLE
NO	SITE	TRIP	CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	ORBIT HAVHPVINC (NMIVNMIVDES)	ENERGY STAGE	WEIGHT (LB)	LENGTH	PERF LOAD Factor
57D	.VTR	UP .			•		•		.TU6	• .		•
	•	DN .	•		•			•	.TLG .	•		•
	•		·	•	•			•				
5 8 D	YTR	UP			•	•	•	•	.TLG .	•	•	•
,		DN .	• • • • • • • •	• ••••••••••••••••••••••••••••••••••••	• ••••• •		•		.TL6	• • • • • • • • • • • • • • • • • • •		• • • • • • • • •
	KZC	UP .			•		•		• •TUG	• •		
		DN			• +				TUG	•		
		UP .			•				TUG	• •		
,		אם.	•		•	•	•		.TUG			
61 D	KSC	UP .	• • • • • • • •	*******	•		•		.TUG .			
-	•	DN .	• •		•		•	·	TUG .	• •		•
620.	KSC .	UP .			•	•	/ .		TUG	 	•	
•	<u> </u>	DN .	•		•	• •	•		TUG .	• •	•	•

						1984	and the second of the second o	Mary Mary Mary Mary Mary Mary Mary Mary			
FLT	LNCH				PAYLCAD				ENERGY	SPUTTLE CARGO	SHUTTLE PERF
		TRIP	CODE	NAME	TYPE	+EIGHT	L/C (FT/FT)	OREIT HAVMPVING (NMIVNMIVDES)	STACE	WEIGHT.LENGTH (LB) . (FT)	LOAD
63D	KSC	UP		•	•		•	•	.TUG	•	
	·	חם.			• • • • • • • • • • • • • • • • • • •		erainst is inhalf action	o D R · · · · · · · · · · · · · · · · · · ·	TUG	• •	• •
640	KSC	UP			*				. TLG	• •	
		DN .	• •		● •	and the state of	er tekstor og som for for til skriver og som skriver og som skriver og som skriver og som skriver og som skriver	o National Carlo States (1984)	.TL6	• • •	•
6 5 D	•	UP	• • • • • • • •	• •	•	•	, , , , , , , , , , , , , , , , , , , ,		.TLG	• •	•
	·	DN .	4 4	•	• •	e e			.TLG	• •	•
eeD.		UP		, , , , , , , , , , , , , , , , , , , ,	•	•	•	0 • 4 • • • • • • • • • • • • • • • • • •	.TUG	• •	•
		DN .	• •	•	•	•		The control of the Paris of the Control of the Cont	.TUS	•	•
6 70	•	UP .		-	•	•	• • • • • • • • • • • •		•	• •	•
j		. DN .		•	•	•		• •	•	• •	•
68D	•	UP .			•	n .	•			• •	•
	• •	. DN .	•	•	•	• · · · · · · · · · · · · · · · · · · ·		·	•	• • •	•
69D	.¥TR	UΡ		• •		•	•			• •	•
	•	DN .	•		•	•		·	•	•	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

					_	1984	<u> </u>					
Ft T	LNCH			44.4	PAYLOAD				SNEGGY	SPUTTL	E CARGO	SHUTTLE
NG	SITE	TRIP	CODE .	NAME	•TYPĘ	.WEIGHT.	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)	ENERGY STAGE		LENGTH (FT)	PERF LOAD Factor
	.VTR	. UP	•		:	•		•	•	•	•	•
	•	. DN .	•			:		•	•	•	•	•
710	.VTR	UP .	•		•			•	•			•
	•	DN .	•		•				•		•	•
720	.WTR	. UP .	•		•		•		•		•	•
	•	. DN	•		•	•		,		•	•	•
	.VTR	UP.	•		•	• •	•		• .		•	•
	•	DN		• • • • • • • • • • • • • • • • • • •	*	•	••••••	•	•		•	•

						1935	are is a 730 Legal an					
FLΤ	LNCH	terit i gira			CADLYA				FAFDGY			SHUTTL!
	SITE	TRIP	CODE	N AME	TYPE	#EIGHT	(FT/FT)	ORRIT HAZHRZING			LENSTH	
1.	KSC		••••••		•		•		.TUG	. 52328.	35.0.	. 933
0	- : ::-:::::::::::::::::::::::::::::::	DN.	4 •		4 4 • :	o O			•	6297	35.0.	200 a. 10 (2 (2 (4))).
2 .	KSC	. UP	• •PL-12	VENUS BUOYANT STATION	LCE-N	. 20617	. 17.3/14.7	ESCAPE	.TUG	. 35914.	52.3	.571
1 4		אם	•	•	a a				.7L6	6297	. 35.C.	•
3.	KSC	IJР	•	•	• • • • •				•	. 52328	35.0	833
•		ON.	•	•	• 4	· · · · ·		出 处。2017年,建设定辖区, 在 设备建设区区域(1875)	•	6 2 9;7	35.6	•
4.	KSC	UP	•PL-12	VENUS BUOYANT STATION	LCE-N	20617.			•	75914.	52.3.	.571
		DN	•	•			` *	,	.TU6	6297	35.0	
5.	KSC			.EXPLORER - SYNC.				19323/19323/ 28.5 SYNC.EQ.		62356		. 992
•		DN	•						.TUG	6297.	35.0	
6.	KSC .	UP	. AST-8	LARGE RADIO OBSERVATORY	CDR-N	2786	.25.0/10.0.	38646/36646/ 28.5	TUG	49410	60.0	785
•		DN	+LS-1 •	LIFE SCIENCES MODULE	LCP .	656	13.0/ 2.2	300/ 300/ 28.5	TLG	6953	48.C.	
7.	KSC .	UP	-PHY-1C	-EXPLORER HIGH ALT.	LCE-N.	1225.	.10.4/ 8.1.	ESCAPE	.Tug	58936	45.4.	. •33
:	•	DN	•	•					.TLG	€25;7.	35.6.	· · · · · · · · · · · · · · · · · · ·

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1985			*			
	LNCH			P	AYLOAD						E CARGO	
NO	SITE	TRIF	CODE	NAME	TYPE	VEIGHT (LB)	L/D (FT/FT)	ORBIT HA/PP/INC (NMI/NMI/DEG)	ENERGY STAGE	VEIGHT		PERF LOAD Factor
. 8	•	•	.PL-27 .SP-18	-SPACE PROCESSING (P)	LCE-N.	2074.	13.5/12.2 5.0/14.0	- ESCAPE - 16C/ 16G/ 28.9	.TLG	54746	53.5	.871
q			•SP-1B		LCR .		5.0/14.0	- 16C/ 16C/ 28.5	i.TLG	11536	40.0	· • • • • • • • • • • • • • • • • • • •
9	•	•	- EUP-6A	DISASTER WARNING SAT.	.LCR-N.	2054. 225.	11.4/ 8.2	. SYNC.EG. . SYNC.EG.	_	62681	59.D	.997
		DN	-NN/D-5	FOREIGN COMSAT	CDR .	830.	12.2/ 5.8	SYNC.EG.	TLG .	7127	47.2	••••••••••••••••••••••••••••••••••••••
10	KSC				CDR-N.	4498	12.2/ 8.3 10.3/ 6.0	SYNC.EG.	TUG .		57.5	.991
•		•	•NN/D-9 •LS-1	FOREIGN SYNC. METEOROL. LIFE SCIENCES MODULE	CDR .	765. 656.	10.3/ 6.C 13.U/ 2.2	SYNC.EG. 300/ 300/ 28.5	-TUG	7719	58.3.	
11.	xsc .	UP	.NN/D-1 .AST-1A	-INTELSAT -EXPLORER - LEO	-CDR-N-	4498. 649.	12.2/ 8.3 12.2/ 2.6	SYNC.EG. 297/ 297/ 28.5		60909	59.4.	_968
•		DN	.NN/D-10	-GEOSYNC. OPERATIONAL MET	CGR .	765.	10.3/ E.C.	SYNC.EG.	TUG -	7062	45.3.	*****
12-1	KSC		-EOP-6A	-MINI-LAGEOS	·CDE-N·	225.	1.6/ 1.6.	SYNC.EQ. 350/ 350/ 28.5 160/ 160/ 28.5	_	62387.	53.8.	.993
•	•	DN .	SP-1C	SPACE PROCESSING (P)	LCR	4189.	5.8/14.0.	160/ 160/ 28.5	TUG .	19486.	40.0.	•••••

			* * * * * * * * * * * * * * * * * * * *		<u>i jstri vi</u>	1985	REF C	a de Mijor e de er e	<ు కొట్టులు జాగాన్ ఉందుకొక్కువు	Market N (State of the con-	. ngam pagat site	. 10	
FLT	LNCH			PΑ	YLCAD	and the second of		Comment of the comment		ENERGY			SHUTTLE PERF
	SITE	TRIP	CODE	NAME		⊈EIGHT		SCREIT	HA/FP/INC NMI/DEG)			LENGTH.	. ~
13.	KSC		NN/0-6 SP-18	LCOMMUNICATIONS R AND D .SPACE PROCESSING (2)					NC.EG. 160/ 28.5		60537	53.1	. 263
		DN	SP-18	SPACE PROCESSING (P)	•	•	5.C/14.0	160/	150/ 28.5	-TLG	11536	40.0	
14	WTR .	•	E0-5D	LENVIRONMENTAL MON. SAY. SPECIAL PURPOSE SAT. LMINI-LAGEOS	.LCE-N	576.	9.7/ 4.7	400/	920/103.0 400/ 90.0 350/ 90.0		21059	58.7	.783
	• •	DN	•	• • • • • • • • • • • • • • • • • • • •	• • • • • •			0	. 4	.TLG	6297	35.0	•
15	KSC	•	LS-1 LS-1 AST-5V	LIST REVISIT LIFE SCIENCES MODULE LIFE SCIENCES MODULE HEAD REVISIT SPACE PROCESSING (P)	·LCR-R ·LCR-R ·CDR-R	682 682 3500	13.0/ 2.2 13.0/ 2.2	300/ 300/ 200/	340/ 28.5 300/ 28.5 300/ 28.5 200/ 28.5 340/ 28.5	•	24862	45.5	.561
		, ,	AST-5V	LST REVISIT .HEAO REVISIT .SPACE PROCESSING (P)	.008	3500.	5.0/14.0	2007	340/ 28.5 200/ 28.5 340/ 28.5		14741	19.5	
16	MIR	,	•E0-3B	.EARTH OBS. SAT. REVISIT .EARTH OBS. SATELLITE .SPACE PROCESSING (P)	"LCR-R	. 863C	36.0/10.2	3007	300/ 99.0 300/ 99.0 300/ 99.0	•	29371	50.5	.994
			E0-3C		.LCR	6213.	36.0/10.2	. 3007	300/ 99.0 300/ 99.0 300/ 99.0	•	17454	50.5	

		- 3 3500	- 100° -	INDEL -	. 3110	The state of the s	GO MANIFE	31 (00)	V 17			<u> </u>	
					4 Y 1 O 4 O	1985		2 (\$) .	a the grade				
FLTLN			A STATE OF S	MARKET STATE OF THE STATE OF TH	AYLOAD		وسموره فناتج			ENERGY		CARGO	SHUTTLI PERF
NO 51	TE	TRIP	CODE	NAME	TYPE	. (LB)	L/D (FT/FT)		HA/HP/INC /NMI/DEG)	STAGE	WEIGHT (LB)	LENGTH (FT)	LOAD FACTOR
17.KS	SC	•	• EOP-68 • EOP-68 • PHY-6C • SP-18	•MINI-LAGEOS •MINI-LAGEOS •HIGH ENERGY PHYSICS (P) •SPACE PROCESSING (P)	-LCR-F	N. 225. R. 22506.	1.6/ 1.6. 1.6/ 1.6. 30.0/14.0. 5.0/14.0.	350/ 120/	350/ 55.0 120/ 55.0	3. 1.	42883.	42.7	.867
•		DN	•PHY-6C •SP-18	*HIGH ENERGY PHYSICS (P) *SPACE PROCESSING (P)	-LCR -LCR	20434. 5239.	30.0/14.0 5.0/14.0	120/ 350/	120/ 55.0 350/ 55.0		28175	39.5	•
18. YT	TR .		•EOP-6C •SP-1B	MINI-LAGEOS SPACE PROCESSING (P)	.CDE-N	225 6171	1.6/ 1.6. 5.0/14.0.	350/ 350/	350/ 90.0 350/ 90.0		20302	11.1	.772
•	•	DN	-SP-18 •	SPACE PROCESSING (P)	-L CP	5239	5.0/14.0	350/	350/ 90.0	•	7741	9.5	•
19.VT	IR .			-EARTH RESCURCES SATSPACE PROCESSING (P) -SPACE PROCESSING (P)	LCR-F	5121.	36.0/16.2. 5.0/14.0. 5.0/14.0.	300/	300/ 97.0		29940	50.5	_984
			NN/D-11 SP-1C SP-1C	*EARTH RESOURCES SAT. *SPACE PROCESSING (P) *SPACE PROCESSING (P)	LCR LCR	4189.	36.0/10.2. 5.0/14.0. 5.0/14.0.	3007	300/ 97.8	•	17093	50.5	••••••••••••••••••••••••••••••••••••••
20 • KS	с :	UP .	-AST-7	LARGE SOLAR OBSERVATORY	-CDR-N	. 27034.	58.5/15.C.	190/	190/ 28.5		27034	50.5	.510
<u>:</u>	•	DN		•	•	• •	•	• • • • • •	*******	•	0	0.	
21.KS	c :		AST-9AV SP-1C				5.0/14.0. 5.0/14.0.				8621	10.0	.381
•	•			FOC. X RAY REVISIT SPACE PROCESSING (P)	LCDR LCR	3500 4189	5.0/14.0. 5.0/14.0.	270/ 276/	270/ 28.9 270/ 28.5	•	7689.	10.0.	******

						1985	31 - 31/2 - 3 3 - <u>22 - </u>			· · · · · · · · · · · · · · · · · · ·		
EI T	L N CH			PI	YLCAD				ENERGY		CARGO	SHUTTLE PERF
	SITE	TRIP	CODE	NAME		(FB)	- التنافي المنافي المن	ORBIT HAVHPVINC (NMIVNMIVDEG)				- · · · ·
22			• • • • • • •	STELLAR ASTRONOMY P) STELLAR ASTRONOMY P)				162/ 162/ 28.5		29179.		• • • • • • •
23		DN -	SP-1C AST-1UD7	STELLAR ASTRONOMY (P) SPACE PROCESSING (P) STELLAR ASTRONOMY (P) SPACE PROCESSING (P)	LCR-R	27287 5121	5.0/14.0. 47.0/14.0	120/ 120/ 90.0 120/ 120/ 90.0 120/ 120/ 90.0 120/ 120/ 90.0	******	324D8	•	
24 -	•	DN -	SP-1C AST-10E	STELLAR ASTRONOMY (P) SPACE PROCESSING (P) STELLAR ASTRONOMY (P) SPACE PROCESSING (P)	LCR-R	5121	5.0/14.0. 40.0/14.0.	162/ 162/ 28.5 162/ 162/ 28.5 162/ 162/ 28.5 162/ 162/ 28.5	•	28017		•
25	•			STELLAR ASTRONOMY (P) STELLAR ASTRONOMY (P)		****		. 162/ 162/ 28.5 . 162/ 162/ 28.5		_ 55019. _ 31387.		
26	KSC -	• 1 • 1	NN/D-15A NN/D-15A NN/D-15B	STELL AR ASTRONOMY (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P)	LCR-N. LCR-N.	6171 6171 5121	5.0/14.0. 5.0/14.0. 5.0/14.0.	. 162/ 162/ 28.5 . 162/ 162/ 28.5 . 162/ 162/ 28.5	•	35589	30.0	.591
•	•	. l . l	NN/D-15A NN/D-15A NN/D-15B	STELLAR ASTRONOMY (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P)	.LC9 .	5230. 5230. 4184.	5.0/14.0. 5.0/14.0. 5.0/14.0.	. 1827 1807 28.5 . 1827 1 <mark>627 29.</mark> 5	•	30219	30.0	• · · · · · · · · · · · · · · · · · · ·

		5109020		SANTOR DESCRIPTION	en langer geropagge for konsteller sterre der die Vollage in der der der der der der der der der der	The second	1985		a.			
			Personal Control			AFOVD	Gigan a statistica statistic field i statistic film (see 11 Till a Marie statistic see execution (septiment execution) i see execution (see execution) i see execution (see execution) i see execution (see execution) in the second execution (see execution) is seen execution (see execution) in the second execution (see execution) in the second execution (see execution) is seen execution (see execution) in the second execution (see execut	Parketin of Colora and Colores on the second	ENEDEX	SHUTTLE	CARGO	SHUTTLE PERF
				CODE	NAME	TYPE	WEIGHT. L/D (L9) . (FT/FT)	ORBIT HAVHP/INC (NMI/NMI/DEG)	STAGE	WEIGHT	LENGTH	
Z CARGONIA	7.				*****	LCR-R	. 24771.50.0/14.0. . 23039.50.0/14.0.	210/ 210/ 28.5.		24771.	• • • • • •	.515
			uP	.AST-11C7	SOLAR PHYSICS (P)	LCR-N	30298.40.0/14.0. 28566.40.0/14.0.	210/ 210/ 28.5		30298		.582
	9.						. 30298.40.0/14.0. . 28566.40.0/14.0.			30298 28566		.582
				.PHY-68		LCR-R			• • • • • • • •	31227		• • • • • •
_	:			.PHY-68	.HIGH ENERGY PHYSICS (P) .HIGH ENERGY PHYSICS (P)	LCR .	• • •		• • •	20720	27.0.	.379
	•		DN	.PHY-607	HIGH ENERGY PHYSICS (P)	LCR	. 18138.27.0/14.C.	120/ 120/ 28.5		. 18138.	27.0.	•••••
	2-1				_ATMOS. SPACE PHY. (L+P) _ATMOS. SPACE PHY. (L+P)					29002 28238		
3	3-1				.ATMOS. SPACE PHY. (L+P) .ATMOS. SPACE PHY. (L+P)					29DO2		• • • • • •

			*	il section in the section of the sec	এমকারেছ বিশ্বাহি পা _র ীক	1985	arsara — Simula a gilgin	The state of the s				and the second second
FI T	LNCH		, #3 / _{2 - 1}	_ ·	AYLOAD	A TOP DESCRIPTIONS	A. To the company of the		ENEDGY		CARGO	SHUTTLE PERF
	SITE	TRIP	CODE	NAME		VEIGHT	L/D (FT/FT)	CRBIT HA/HP/INC (NMI/NMI/DEG)	STAGE			
34	WTR .	UP.	-PH Y-7C	ATMOS. SPACE PHY. (L+P)	LCR-R		•		•	29002	60.0	669
		DN	PHY-7C	.ATHOS. SPACE PHY. (L+P)	• .		· .	180/ 180/ 90.0	•	_ 28238	€0.0	
35	KSC	UP.	LS-2A30	LIFE SCIENCE (L)	•)	•	150/ 150/ 28.5	•	37532	58.5	.600
	9	DN		LIFE SCIENCE (L)	•		•	15C/ 15C/ 28.5	•	. 30185.	58.5	•
36	KSC	UP		•	•	•	9	150/ 150/ 28.5		37532	58.5	.600
		DN	LS-2A3U	aLIFE SCIENCE (L)	-LCR	30185	.58.5/14.G.	150/ 150/ 28.5	•	_ 3G185.	58.5	•
37.	KSC	UP .	ST-2A	SPACE TECHNOLOGY (L+P)	·LCR-R	25296	60.0/14.0.	200/ 200/ 55.0	•	. 2529E	60.0	584
		DN	ST-2A	SPACE TECHNOLOGY (L+P)	•LCR	24532.	.60.0/14.0.	. 20E/ 20E/ 55.C	•	2 4532	60.0	-
38	KSC	UP	ST-28	SPACE TECHNOLOGY (L+P)	.LCR-R	25296	.60.0/14.0.	200/ 200/ 55.0	•	25296	FC.E.	. 584
		DN	ST-2B	SPACE TECHNOLOGY (L+P)	-LCR -	24532	.60.0/14.C.	. 2007 2007 55.0	•	24532	€ 0. 0	
39	KSC	UР	ST-2C	-SPACE TECHNOLOGY (L+P)	LCR-R	2 5296.	.60.8/14.0	260/ 200/ 55.0	•	25296	65.0	584
		DN	ST-2C	SPACE TECHNOLOGY (L+F)	LCR .	24532	6C.U/14.t.	. 760/ 200/ 55.0	•	24532	60.0	•
40	KSC	UP .	ST-20	-SPACE TECHNOLOGY (L+P)	LCR-R	25296	.60.U/14.C	. 2007 2007 55.0	•	25295	60.C	584
		DN	ST-20	SPACE TECHNOLOGY (L+P)	-LCP	24532.	.60.5/14.C.	2007 2007 55.0	•	. 24532.	€0.0	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

	i tas∎iV.	- Zeinen street	P 1 - 2 - 2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	70, 11 day 11 day 11 day 12 day 12 day 12 day 12 day 12 day 12 day 12 day 12 day 12 day 12 day 12 day 12 day 12	/	1985						 .
FLT	LNCH			980	PAYLOAD	A STATE OF THE STA	a make d <u>ibah bah</u> a				CARGO	SHUTTLE
	SITE		CODE	NAME		WEIGHT (L8)		ORBIT HAVHP/INC (NMI/NMI/DEG)	ENERGY Stage		LENGTH (FT)	PERF LOAD FACTOR
41	KSC	. UP	-0A-1A	#OFFICE OF APPLIC. (L+0)	LCR-R	27002	.60.0/14.0.	180/ 180/ 55.0	•	27002	60.0	-583
	o O	o DN	-0A-1A	OFFICE OF APPLIC. (L+P)	LCR .	26138.	60.0/14.0.	180/ 180/ 55.0	• • • • • • •	26138	60.0	
42	VTR	. UP	-OA-18	OFFICE OF APPLIC. (L+P)	LCR-N	25402	60.0/14.0.	160/ 160/ 90.0	•	25402	60.0.	.776
٠		. DN	-0A-18	OFFICE OF APPLIC. (L+P)	.LCR	24538.	60.0/14.6.	160/ 160/ 90.0		24539.	60.0	
43.	•			SPACE PROCESSING (L+P)						26084.	F C . G .	.499
•	• .	DN	•SP-1A •	-SPACE PROCESSINE (L+P)	LCR	25320	60.0/14.C.	180/ 180/ 28.5.	•	25320.	60.0	
44.	WTR .	UP	- NN/D-16A	EARTH OBSERVATION (L+P)	.LCR-₽.	26502.	60.0/14.0.	180/ 180/ 90.0		26502	60.0.	.824
•		DN	• NN/D-16A •	◆EARTH OBSERVATION (L+P)	LCR .	25638.	6u.U/14.E.	180/ 180/ 90.0.		25639.	60.0.	• • • • • •
45.	KSC .	UP.	- NN/D-16B	ASTRONOMY (P)	LCR-R	26799.	45.0/14.0.	162/ 162/ 28.5		2679F.	45.C.	.488
•		DN	• NN/D-16B	_ASTRONOMY (P)	LCR .	25166.	45.0/14.6.	162/ 162/ 28.5.		25166.	45.0.	* * * * * * *
46.	KSC .	UP	- NN/D-16C	GPL 1 (L+P)	LCR-R.	Z 6 4 8 2 .	60.0/14.0.	200/ 200/ 28.5.	•	26482.	60.0.	.525
•	•	DN	NN/D-16C	●GPL 1 (L+P)	LCR .	25718.	60.0/14.C.	200/ ZDD/ 28.5.	•	25718.	60.0.	• • • • • •
47-	KSC .	UP	NN/D-16D	•GPL 2 (L+P)	LCR-R.	26261.	60.0/14.0.	200/ 200/ 28.5.	*	26261.	60.6.	.522
	•	DN	NN/D-16D	■6PL 2 (L+F)	LCR .	25497.	60.0/14.0.	200/ 200/ 28.5.	•	25497.	60.0.	• • • • • •

	2.4.1	.	ing a selection of the		8.78 0	1985	la de la companya de la companya de la companya de la companya de la companya de la companya de la companya de	the state of the s		v 1. 17	*	
FLT	L N CH			P	AYLOAD	The Barrell Control of the Section	Marine Carlotte (1985) and the second of the	ang nisa in ing mananana ang mga mga mga mga mga mga mga mga mga mg	SNEDGY			SPUTTLE
	SITE		CODE	NAME	TYPE	MEIGHT	- L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)	STAGE	NEIGHT	LENGTH	PERF LOAD FACTOR
4.8	KSC	UP	• •	•	•	•	•		XTUG	54910	35.C	874
	•	. DN	•	•	•		•	P	•	0.	. C	•
49	KSC .	UP	-PL-21	MARINER SATURN ORBITE?	LCE-N	4988	39.0/14.7	ESCAPE	.P-II	15022	47.5	. 239
	•	DN	•			•	• • • • • • • • • • • • • • • • • • • •	> * * * * * * * * * * * * * * * * * * *	•	. D.		• • • • • • • • •
50	KSC	UP	•	•	And the second s		•		.XTUS	. 54910.	35.8	374
		DN .	•	•	* * * * * * *	• • • • • • •	*	> # 4 4 0 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	-	0.		- • • • • • • • • • • • • • • • • • • •
51	KSC	UP	-PL-21	_MARINER SATURN CRBITER	.LCE-N	4988	.39.0/14.7.	ESCAPE	-3-II	15022	47.5	. 239
	•	DN	•	•	-		• •		•	· 5	0	
52D	¥TR .	UP	•	•		- (12,030 - 12,030 - 13,000 - 13,000 - 13,000 - 13,000 - 13,000 - 13,000 - 13,000 - 13,000 - 13,000 - 13,000 -	•	Harris Report to the Control of the	*	•		
		DN	•	* * * * * * * * * * * * * * * * * * *	•		• • • • • • • • • • •		•	• • • • • • •		•
5 3 D	WTR	UP.	#1;	• ************************************	• •			The second secon	TLG	•	र हिन् <u>न के किया के किया किया किया किया किया किया किया किया</u>	·
		DN .	•	• • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •		•		.TLS	• • • • • • •	,	
540.	WTR .	UP.		•	• •		· · · · · · · · · · · · · · · · · · ·	Parameter and the second of th	•	påser erer <u>ejo</u> n •	<u></u>	
		DN							•	• • • • • • •		

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

		JYT			1985	CGO MANTE			#* * *		
FLT LNC	н			PAYLOAD	*: ***********************************	i katang mengahan pangan		54536¥	SPUTTL	E CARGO	SHUTTLE
NO SITE	ETRIP	CODE	NAME	TYPE	LEIGHT	LZO (FTZFT)	CRBIT HAVHPVINC (NMIVNMIVDEG)	ENERGY Stage	WEIGHT	LENGTH	PERF LOAD FACTOR
550.WTR	UP	•	•	•	•		•	TUG	•	•	
•	• DN	•	•	-CDR	•			TUG			• • • • • • • • • • • • • • • • • • •
56D.KSC	• UP	•	•	•			•	TUG	•		•
•	- DN	•		•	•			TUG		•	•
57D.KSC		•	•	•	•	•	•	716	•		•
•	• DN	•	•	•	•			716		•	
58D.KSC	. UP	•	•			•		TLG	•		
•	DN .	•	•	•	•	•	•	7LG .			
5 9D . KSC	. UP	•	•	•		•	•	TLG .			
. •	- DN		•	• .	•	*		TLG			
eoD.ksc	UP	•	•	•		•		TUG			
•	. DN		•	•	•	•		TUG			•

	: : : : :		end in a regarding the second	 (2) The Manager of the control of the control of	ENTRARY (* 1864)	1985	million on progressive executive states	 (*) A A A A A A A A A A A A A A A A A A A	opus i sette o tity (s 55)	ইয়ুট প্রয়র্থ কোন সংগ্রহণ	Zawania (1931)	
FIT	LNCH		* 120° 120° 120° 120° 120° 120° 120° 120°		LOAD	A Property of the Common of th	A CONTRACTOR OF		FAFOGV	SHUTTLE (CARGO	SHUTTLE PERF
NO	SITE	TRIP	CODE	NAME	TYPE	¥EIGHT. (L8)	L/D (FI/FT)	ORBIT HAVHP/INC (NMI/NMI/DEG)	STAGE	weight.L! (LB) .	ENSTH	
6 1 D	WTR	UP	•	•	• •	•	, , , , , , , , , , , , , , , , , , ,	•	TLG .	• •	•	·
		DN		• • • • • • • • • • • • • • • • • • •		• • • • •		• • • • • • • • • • • • • • • • • • •	TLG .	•	• • • • •	
6 2 D	WTR .		• • • • • • • •			* · · · · · · · · · · · · · · · · · · ·		***********	.TLG		•	. 41.36 Sec. 115
•		DN .	•	•	•	• •	, a	• • •	. T U G	• •	•	•
63D.	WTR .	UP .							.TUG	• •	•	
		DN .				• •			.TUG	4	0	
64D		UP .		,		•			.1UG		•	,
	i waa ka gan	DN .) ((<u>)</u>			•	。 第一、一、一、一、一、一、一、一、一、「「「「「「」」」 第一、一、一、「「「「」」 「「」」 「「」 「「」 「「」 「「」 「」 「」		.TUG •	* * * * * * * * * * * * * * * * * * *		
65D.	YTR .	UP .		·		• •		• • • • • • • • • • • • • • • • • • • •		•	* * * * * *	, , , , , , , , , , , , , , , , , , , ,
•	• • •	•				•	*		•	•	• · · · · · · · · · · · · · · · · · · ·	professioners of the contact
66D.	WTR .	UP .	*******	, , , , , , , , , , , , , , , , , , , ,		• • •		, 				
•	• • • • • • • • • • • • • • • • • • •	• Oderski Primari i				***		N 100		•	0	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1985						
F 1 7	LN CH			PA	CAOLY				ENERGY	SHUTTLE	CARGO	.SHUTTLE ■PERF
NO	SITE	TRIP	CODE	N AM E	TYPE	(FB) AEIGHI	L/O (FT/FT)	ORBIT HA/HP/INC (NYI/NMI/DEG)	STAGE	WEIGHT (LB)	LENGTH	LOAD FACTOR
6 70.	WTR .	uP .					•		•	•		
	•	DN .				•		Y	•	•) 	•
68D	.WTR	UP .	•		:			•	•	•		•
	•	. DN .						•		•	•	
6 aD	. WTR	uP .		•	:	• •		•	•	•	•	•
,	•	DN .		,	•	•			• •	•		•
7 CO		UP.	•		•	•	•	<u> </u>	•	•	•	
•	•	DN .		, 	•	•			•	•	· · · · · · · ·	•
	. WTR	uP.		•	•		•	· · · · · · · · · · · · · · · · · · ·		•	•	•
•		. DN .		, 		•	•	· · · · · · · · · · · · · · · · · · ·	•	•	•	•
		. UP .		•	•		······································	•	•	•	•	•
•		DN .		· • • • • • • • • • • • • • • • • • • •	•	•	•	· · · · · · · · · · · · · · · · · · ·	•	•		•
7 30 ·	VTR .	UP .	•		•	•		•	•	•		•
•		DN .	• • • • • • • • • • • • • • • • • • • •			• • • • • • • • • • • • • • • • • • • •	•		• • • • • • • • • • • • • • • • • • • •		•	· · · · · · · · · · · · · · · · · · ·

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

				, e i e				1995		B. Leaving and States and the	reference to the second			
FLT	LNCH						PAYLCAD			Rights were a district and the re-			E CARSO	
NO	SITE		P.	CODE	•	NAME	.TYPE	.WEIGHT.		ORBIT HA/HP/INC (NMI/NMI/DES)		WEIGHT	.LENGTH	PERF LCAD FACTOR
740	WTR	. UP	•		•		•	• •			-	•	•	•
	•	. DN	•		•	• • • • • • • • • • • • • • • • • • • •	*	•	•	· • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • •	•		· · · · · · · · · · · · · · · · · · ·

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1986							
E 1 7	LNCH			PA	YLOAD		* .			E NE RG Y			SHUTTLE PERF
		TRIP	CODE	N AM E	TYPE .	WEIGHT (LB)	L/9 (FT/FT		ORBIT HA/HP/INC (NMI/NMI/DEG)			LENGTH	
1	•	•	.PHY-2B	GRAVITY/RELATIVITY SAT.	• •	•	•	•	ESCAPE		38095		
,	-	. DN		• 1		•		•		.TUG	6297	35.0	•
2		UP		•	: :	ų	•	•		.TUG	62732.	35.0	. 998
	•	DN	•					•		.TUG	6297	35.0	•
3	×sc	. UP	PL-22	MARINER URANUS PROBE	CCE-N.	2137.	25.0/)5	.с.	ESCAPE	.xTUG	. 46245.	60.0	736
			•	•		•		•		•	D	Û	
B.	KSC	. UP	•	•	: :			•		.TLG	. 62732	35.0	998
		. DN		•	:			:_		.TLG	6297	35.0	•
5	KSC	• UP	PL-22	MARINER URANUS PROBE	.COE-N.	21 37	25.0/15	.0.	ESCAPE	.x TUG	46245	60.6	.736
		. DN	•		•			•		:		מ	•
6.	KSC		E0-5E	SPECIAL PURPOSE SAT.	LCE-N.	676	9.7/ 4	.7.	SYNC.EG.	_TUG	62625	44.7	. 996
•					CER	640	12.2/ 2	6.1	9323/19323/ 28.	i.TLG	6937		•
7	KSC	• UP	-PHY-1C	EXPLORER HIGH ALT.	LCE-N.				ESCAPE	TUG	_ 58936.	45.4	938
•		DN	• • • • • • • • • • • • • • • • • • •		•		,	••••	*******	.TLG	6 2 9 17	35.0	• • • • • • • • • • • • • • • • • • •

					1986		<u>No. a de la companya</u>	Tel State Commission		الكانب يستوان بيسيا	سنسبست البيوا
FLT LNCH				FAYLOAD			the or one to be able to the	ENERGY	SPUTTLE		SHUTTLE PERF
NO SITE		P CODE	NAME	TYPE	¥EIGHT (L8)	L/D (FT/FT)	ORBIT HAZHPZI (NMIZNMIZDE)	INC STAGE	WEIGHT	LENGTH	
8.KSC	UP	.PL-10	INNERPLANETARY FOLLOW-	ON.LCE-N.	2772	11.5/ 8.4.	ESCAPE	.716	. E8177.	46.5	.926
•	. DN	•	•	•				•TUG	6297	35.0.	
9.KSC	. UP	.PL-28	ASTEROID RENDEZVOUS	LCE-N.	4583.	20.8/14.7.	ESCAPE	• •TUS	. 58673.	55.8.	. 934
	. DN	•	•	•		•		.TLG	6297.	35.C	
10.KSC	. UP	-PL-28	.ASTEROID RENDEZVOUS	LCE-N	4583	20.8/14.7.	ESCAPE	• TLG	58673	55.8	.934
•	- DN	•	•					.TUG	6297.	35.0	
11.KSC	. UP	•LUN-2 •SP-18	.AUTO. LUNAR ORBITER .SPACE PROCESSING (P)				ESCAPE 160/ 160/ 2		42491	51.2	.676
•	_	-SP-18	SPACE PROCESSING (P)	LCR	5239	5.0/14.0.	160/ 160/ 2		11536	40.0	
12.KSC	UP		** ** ** ** ** ** ** ** ** ** ** ** **		982	.12.2/ 5.8.	SYNC.EG.	•	62783	57.4	-999
	■ DN	-E0-4A	SEOS R AND D	CDR			SYNC.E0.		9292	46.0	•
13.KSC	. UP	-NN/D-1 -NN/D-4	.INTELSAT .TRAFFIC MANAGEMENT			12.2/ 8.3. 12.5/10.3.	SYNC.EG. Sync.eg.	• TU G	58532		963
•	. DN	•LS-1	LIFE SCIENCES MODULE	LCR %	656	13.0/ 2.7.	300/ 300/ 2	8.5.TUG .	6953	48.0	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

-						198	6				•			
F. T		_	<u> </u>	. P.	AYLOAD						ENERGY		1	SHUTTLE PERF
	SITE		· CODE	• NAME	.TYPE		_	-	ORBIT HA/F!		w	WEIGHT.		LOAD
14	KSC	UP.		INTELSAT FOREIGN SYNC. METEOROL.		R. 80	7.10.3	6.0.		•	•	62312	57.5	.991
				FOREIGN SYNC. METEOROL. LIFE SCIENCES MODULE		. 75	5.10.3.	6.0.		•	TLG	7718	58.3	
						N - 64	9.12.2	2.6.	54 NC.EQ. 297/ 297.			62111	59.4	.988
•		DN		*GEOSYNC* OPERATIONAL MET *SOLAR PHYSICS MISSION		• 76	5.10.3	6.0.				11208	58.4	•
16	KSC	UP.	• •NN/0-2B •SP-18	.u.s. DOMCOMSAT .SPACE PROCESSING (P)	.CDR-1	N. 4491 R. 617	2.12.2	8.3. /14.L.	SYNC.EQ. 160/ 160/	/ 28.5	116	. 62197	52.2	990
•		DN	-SP-18	SPACE PROCESSING (P)	_	• 523°		14.0.	160/ 160/	/ 28.5		11536		•
17.		•	• SP-18		*FCS=	R. 517	5.0	114-0-	160/ 150/	28.5	•			.963
4		DN		-DISASTER WARNING SAT.	•LCP	- 201	7.11.4	6.2-	SYNC.EG, 160/ 160,	•	. TU G		51.4	•
18.	WTR .		.NN/D-8 .EOP-8	•ENVIRONMENTAL MON. SAT. •VECTOR MAGNETOMETER SAT.								71726	57.8	.808
•		DN	•	· • • • • • • • • • • • • • • • • • • •	•	•	•	•	• • • • • • • • • •	• • • • • •	aut.	6297	35.0	• • • • • • • • • • • • • • • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1996						
FLT	LNCH			,	PAYLOAD		rika - Propensi		r v e v c v	SHUTTLE		
NO	SITE	TRIP	CODE	N AM E	TYPE	∀EIGHT (L9)	L/D (FT/FT)	ORBIT HAZHPZINC (AMIZNMIZDEG)			ENSTH	
19	KSC	•	.AST-6V .LS-1 .AST-3 .AST-7V .SP-18	LST REVISIT LIFE SCIENCES MODULE SOLAR PHYSICS MISSION LSO REVISIT SPACE PROCESSING (P)	·LCR-R· ·LCP-R· ·CDR-N·	682. 4281. 3500.	13.0/ 2.2. 13.1/11.6. 5.0/14.0.	34C/ 34C/ 26. 3CC/ 3CC/ 28. 27C/ 27C/ 28. 19C/ 19C/ 28. 34C/ 34C/ 28.	5. 5.	28766.	45.6	.604
•		•	*AST-6V *AST-7V *SP-18	LST REVISIT LESO REVISIT SPACE PROCESSING (P)	.CDR .	350U.	. 5.0/14.D.	340/ 340/ 28. 190/ 190/ 28. 340/ 340/ 28.	5.	14741.	19.5	•
20	KSC	UP	•AST-9B	FOC. X RAY TELESCOPE	CDR-N	24136.	53.0/14.0.	278/ 270/ 28.	5.	31029.	57.5.	. 628
	•	DN .	- AST-5 -	-HEAO	.CDR	17214	17.5/14.0.	200/ 200/ 29.	5.	19716.	22.6	· • • • • • • • • • • • • • • • • • • •
	WTR		•E0-3C •SP-18	EARTH OBS. SAT. SPACE PROCESSING (P)				300/ 300/ 99. 300/ 300/ 99.		25249	4 5. 5.	.924
-				■EARTH OBS. SATELLITE SPACE PROCESSING (P)	LCR LCR	6213. 5239.	36.0/10.2. 5.0/14.0.	30C/ 300/ 99.0 300/ 300/ 99.0		13954	45.5	•
22.	WTR			.EARTH RESOURCES SATSPACE PROCESSING (P)				300/ 300/ 97. 300/ 300/ 97.		25249.	45.5.	. 906
•				-EARTH RESCURCES SAT. -SPACE PROCESSING (P)	LCR .			300/ 300/ 97.0 300/ 300/ 97.0		. 13954.	45.5.	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

-						1996					
5 	LNCH			PA	YLOAD	·		ENERGY			SHUTTLE PERF
	SITE	TRIP	CODE	NAME	TYPE	*EIGHT. L/D (LB) . (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)		WEIGHT (LB)	LENGTH	
23	KSC	•	. AST-10G .SP-1C	.STELLAR ASTRONOMY (P) .SPACE PROCESSING (P)	.LCR-R.	. 13005.10.0/14.0. . 5121. 5.0/14.0.	200/ 200/ 28.5. 162/ 162/ 28.5. 200/ 200/ 28.5. 200/ 200/ 28.5.	•	40681	37.5	.687
		•	- 26-1C	.SPACE PROCESSING (P)	.LCR	. 4189. 5.C/14.O.	162/ 162/ 28.5. 200/ 200/ 28.5. 200/ 200/ 28.5.	•	19751	20.0	
24	WTR		*E0P~8 *SP-1C *SP-1C	SPACE PROCESSING (P)	LCR-R.	. 1209.10.4/ 6.2. 5121. 5.0/14.0. 5121. 5.0/14.0	216/ 216/ 90.0. 216/ 216/ 90.0. 216/ 216/ 90.0. 216/ 216/ 90.0. 216/ 216/ 90.0.	• •	17781	35.8	.725
;		,	• SP-1 C	SPACE PROCESSING (P)	.LCR .	. 4189. 5.D/14.O.	216/ 216/ 90.C. 216/ 216/ 90.D. 216/ 216/ 90.C.	,	12567	15.0	•
25	•	UP DN	•	LONG DURATION EXP. FAC.	COR-R	10200.35.5/14.0.	270/ 270/ 28.5	•••••	10200		
26.		DN	-ST-1	SPACE PROCESSING (P) LONG DURATION EXP. FAC. SPACE PROCESSING (P)	CDR	10200.35.5/14.0.	• • • • • • • • • • • • • • • •		5121		. 343

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

		f . v		government of the second of th	Frances	1986	jj∏asē v 1711 s into jak					
FI T	L N CH			PA	YLOAD	eries (type) :	Alexander (Marie Marie M	Bree Store at Table 1 at Table	-45004	SHUTTLE		SHUTTLE
	SITE		CODE	NAME	TYPE	WEIGHT (L9)		CRBIT HA/HP/INC (NMI/NMI/DEG)		WEIGHT	LENGTH	PERF LOAD FACTOR
27	• VTR	• .	•NN/D-14 •NN/D-14 .	• GLOBAL EARTH AND OCEAN • GLOBAL EARTH AND OCEAN • GLOBAL EARTH AND OCEAN • SPACE MANUFACTURING (P)	·LCR-N·	5062 5062	.13.7/12.7. .13.7/12.7.	700/ 200/ 98 _* 0	•	21357	46.1	. 816
	•	o DN	NN/D-15A	SPACE MANUFACTURING (P)	LCR	5239	5.0/14.0.	2007 2007 38.C	• • • • • • • • • • • • • • • • • • •	5239	5.0.	
28	• •		• • • • • • • • •	STELLAR ASTRONOMY (P) STELLAR ASTRONOMY (P)				120/ 120/ 90.0		40200		*****
29	• •							162/ 162/ 28.5 162/ 162/ 28.5		. 55019. . 31387.		*****
30				STELLAR ASTRONOMY (P) STELLAR ASTRONOMY (P)	• • • • • • •					41512		
31			******	STELLAR ASTRONOMY (P)				162/ 162/ 28.5 162/ 162/ 28.5		29168		
32	KSC			SOLAR PHYSICS (P) SPACE MANUFACTURING (P)	LCR-R.	24771. 6171.	50.0/14.0. 5.0/14.0.	210/ 210/ 28.5 210/ 210/ 28.5	•	30942	55.0.	.589
	- 0 10 10			SOLAR PHYSICS (P) SPACE MANUFACTURING (P)	LCR .	23039. 5239.	50.0/14.0.	210/ 210/ 28.5 210/ 210/ 28.5	•	28278	55.0.	• • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

							1986	MMINITOIN			-			
F 1 2	LNCH				P	YLOAD	1 790				5.5.50	SHUTTLE		
NO		TRIP	CODE	NAME		TYPE	WEIGHT (LB)	L/D (FT/FT)		HAZHPZINC MMIZDEG J	ENERGY STAGE		LENGTH	PERF LOAD . FACTOR
33	•	••••	• • • • • • • •	SOLAR PHYSICS (P)	• • • •					210/ 28.5		41363.	47.0	.712
	•	• DN	• AST11C30	SOLAR PHYSICS (P)		LCR	31751	47-0/14-0-	210/	210/ 28.5.	•	31751.	47.G.	· ·
34	KSC	•	• NN/D-15A	HIGH ENERGY PHYSICS SPACE MANUFACTURING SPACE MANUFACTURING	(P-)	-LCR-R-	6171.	5.0/14.0.	120/	120/ 55.0.	•	34848	40.0	.621
	•	•	• NN/D-15A	HIGH ENERGY PHYSICS SPACE HANUFACTURING SPACE HANUFACTURING	(P)	LCR .	5239.	5.0/14.0.	120/	120/ 55.0.	1	30912	40.6	
35	KSC	•	NN/D-15B NN/D-15B	HIGH ENERGY PHYSICS SPACE MANUFACTURING SPACE MANUFACTURING SPACE MANUFACTURING	(우) (우)	.LCR-R.	5121 . 5121 .	5.0/14.0. 5.0/14.0.	120/ 120/	120/ 28.5. 120/ 28.5.	•	36093	42.0	. 557
		•	NN/D-15B NN/D-15B	HIGH ENERGY PHYSICS SPACE MANUFACTURING SPACE MANUFACTURING SPACE MANUFACTURING	(P)	LCR .	4184. 4184.	5.0/14.0. 5.0/14.0.	120/ 120/	120/ 28.5. 120/ 28.5.	,	30690.	42.0	· • • • • • • • • • • • • • • • • • • •
36				HIGH ENERGY PHYSICS								39218.		
		DN .	•PHY-6030.	HIGH ENERGY PHYSICS	(P)	•		45.0/14.0.	120/	120/ 28.5.		30598.	45.0.	
37.	KSC	UP .	PHY-7A	ATMOS. SPACE PHY. (L	+P)	LCR-F.	29002.	86.C/14.C.	200/	2DC/ 28.5.		29002	60.0	.555
•		DN .	PHY-7A	ATMOS. SPACE PHY. (L	+P }	LCR .	28239.	60.0/14.C.	2007	200/ 28.5.	•	28238.	60.0	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1986			a war en en ej d			
FLT	LNCH			P	CAOLYA			Joseph College L. College Coll	E NE RG Y		CARGO	SHUTTLE PERF
NO	SITE	TRIP	CODE	N AM E	7 Y P E	*EIGHT (LB)	L/D (FT/FT)	ORBIT HAZHPZINC (NMIZNMIZDEG)	u			
38	KSC	UP	-PHY-78	_ATMOS. SPACE PHY. (L+P)	LCR-R	29002	. EG . G/14 . G .	200/ 200/ 55.0	•	29002	60.0	.635
	•	. DN	•PHY-78 •	.ATMOS. SPACE PHY. (L+P)	LCR .	28239	60.0/14.C.	200/ 200/ 55.0	•	. 28238	60.0	•
39	WTR	UP	.PHY-7C		LCR-R	29002	60.0/14.C.	1887 1887 90.0	•	. 29002.	60.0.	. 863
	•	DN.	-PHY-7C	ATMOS. SPACE PHY. (L+P)	.LCR	28238	60.0/14.0	180/ 180/ 90.0	•	. 78238	60.0	
40				.ATMOS. SPACE PHY. (L+P)						. 29002.	50.0	. 868
	•	DN -	-PH Y-7 C -	ATMOS. SPACE PHY. (L+2)	.LCF	28239.	6C.C/14.0.	180/ 180/ 90.0	•	- 78 2 38	60.0	
41	KSC	UP	LS-2A30	LIFE SCIENCE (L)	-LCR-R-	37532	58.5/14.0.	150/ 150/ 28.5	•	37532	58.5.	•600
•		DN	•LS-2A30	LIFE SCIENCE (L)	LCR .	30185	58.5/14.0.	150/ 150/ 28.5	•	30165.	58.5.	••••••••••••••••••••••••••••••••••••••
42	KSC .	ÙP	LS-2A30	LIFE SCIENCE (L)	LCR-R.	37532.	58.5/14.0.	150/ 150/ 28.5	•	37532	58.5.	. 600
	,	DN	-LS-2A30	LIFE SCIENCE (L)	LCR	30185	58.5/14.0.	150/ 150/ 29.5	•	30165.	58.5	· • • • • • • • • • • • • • • • • • • •
434	KSC	υP	.ST-2A	SPACE TECHNOLOGY (L+P)	·LCR-R.	2529E		20E/ 200/ 55.C	•	25296	60.C.	. 584
•		-	ST-2A	SPACE TECHNOLOGY (L+P)	LCR .	24532.	50.0/14.0.	768/ 200/ 55.0	•	24532	60.4.	
44.	KSC .	UP .	ST-2B	SPACE TECHNOLOGY (L+P)	LCR-R.	25296.	6U.0/14.L.	2007 2007 55.0	•	25295	60.0.	. 584
	•	DN	ST-28	SPACE TECHNOLOGY (L+P)	LCR .	24532	60.0714.0.	2007 2007 55.U.		24532	60.0.	******

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

-		·				1986	*** <u>***</u>			·		
				P.	YLOAD							SHUTTLE
	LNCH	TRIF	CODE	N AM E	TYPE	VEIGHT (LB)	L/O (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)	ENERGY STAGE	WEIGHT	LENGTH	PERF LOAD FACTOR
4:5	.KSC	. up	ST-2C	SPACE TECHNOLOGY (L+P)	·LCR-R	25296.	60.0/14.C.	2LE/ 2U0/55.C	•	25296	60.0	.584
	<u>. </u>	. DN	-ST-2C	SPACE TECHNOLOGY (L+P)	LCR .	24532	66.0/14.6	200/ 200/ 55.0		24532	60.0	•
46	.KSC	• up	.ST-2D	SPACE TECHNOLOGY (L+P)	LCR-R.	25296	60.0/14.0.	2007 2007 55.0	•	. 2529A.	60.0	.584
	:	. DN	-ST-2D	SPACE TECHNOLOGY (L+P)	LCR .	24532	60.0/14.C.	200/ 200/ 55.U	•	24532	50.0	
47	WTR		.0A-1A	.OFFICE OF APPLIC. (L+P)		• • • • • •				27002		
	:	• DN	-0A-1A	OFFICE OF APPLIC. (L+P)	LCR .	- 26138. -	.60.0/14.0.	. 160/ 160/ 90.0	•	. 26138.	. 6D.D.	•
48	KSC	UP	.0A-1B	_OFFICE OF APPLIC. (L+º)	⊾L¢R-R	25402.	60.C/14.C	18C/ 18D/ 55.C		25402	60.0	561
	•	• DN	-0A-18	OFFICE OF APPLIC. (L+0)	LCR .	24538	60.0/14.0.	. 180/ 190/ 55.D	•	24538	60.0	•
49	.KSC	UP	.SP-1A	_SPACE PROCESSING (L+P)	LCR-R	26084.	.60.0/14.0.	180/ 180/ 28.5	•	26084	FO.O.	499
	•	• DN	→5P-1 A	-SPACE PROCESSING (L+P)	LCR .	25320	60.0/14.C.	. 180/ 180/ 28.5	-	25320	60.0	•
50	WTR	. UP	. NN/D-16A	_EARTH OBSERVATION (L+P)	LCR-F	26502	.60.0/15.C	180 / 180 / 90.0	•	26502	60.D	.824
	•	. DN	NN/D-16A	• EARTH OBSERVATION (L+P)	LCR .	25838	60.0/14.0.	. 18C/ 180/ 90.D	•	25638	60.0	
51	KSC	UP.		ASTRONOMY (P) SPACE MANUFACTURING (P)				. 162/ 162/ 28.5 . 162/ 162/ 28.5		31919	59.0	.548
	•	DN	NN/D-16B NN/D-15B	ASTRONOMY (P) SPACE HANUFACTURING (P)	_			162/ 162/ 28.5 162/ 162/ 28.5		29350	50.0	· • • • • • • • • • • • • • • • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

					1988						
FLT.LNCH				CACLYAS	aanse (f. 1911) <mark>6. jaanse</mark> keelen ja elega						SHUTTLE PERF
NO SITE		CODE	N AM E	TYPE .	WEISHI.	L/D . (FT/FT) .	OPBIT HA/HP/INC (NPI/NMI/DEC)	STAGE	WIISHT (LS)	LENGTH	LOAD FACTOR
52.KSC	UP	NN/D-18¢	.GPL 1 (L+P)	· LCR-R.	26482.		2007 2007 28.5	•	26482	60.0	. 525
_		NN/D-16C	■GPL 1 (L+P)		25718.	60.0/14.0.	200/ 200/ 28.5		25718	FO.C.	
5 3D. WTR	UP .	•	•		<u>, </u>	•.		•	•	•	• •
	DN		•	• •	* * * * * * *		• • • • • • • • • • • • • • • • • • • •	• • • • • • •	•		• • • • • • • • • • • • • • • • • • •
54D.WTR	UP .	•	•				1	Tug	4		
	DN .		•	• • •	• • • • • •	· · · · · · · · · · · · · · · · · · ·		.TUG	•	•	• • • • • • • • • • • • • • • • • • •
550.WTR	UP .		•		. 1	•	All the second s	4			•
•	אס	•	• • • • • • • • • • • • • • • • • • •	• • •			. 4 4 4 4 4 5 5 5 5 6 6 6 6 6 6 6	•••••••	•	•	•
56D.VTR	UP .		•	• •				.TLG	• •	•	•
	DN .		• • • • • • • • • • • • • • • • • • •	• • •				-TUG		•	•
57D.KSC	UP.	•	•	• •		p		. TLG	• •	•	•
•	DN		• · · · · · · · · · · · · · · · · · · ·	•	• • • • • • •	•		.TLG	• • • • •		• • • • • • • • • • • • • • • • • • •
58D.NTR	UP.		-		-11	ind a superior (1) to the		TLG			•
•	DN .		• ••••••••••••••••••••••••••••••••••••		• • • • • •	•	• • • • • • • • • • • • • • • • • • • •	. TLG	•	•	• • • • • • • • •
•	•		•	• •	•	•		•		•	·

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

*	1	··	g 85 c	**************************************		19 85					·	
FIT	LNCH			Т.	CAOJY	∵. "		·	ENERGY	SHUTTLE	CARGO	SHUTTLE PERF
NO	SITE	TRIP	CODE	N AME	†YP ₹	(LE)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)	STAGE	WEIGHT (LB)	LENGTH (FT)	LOAD FACTOR
	VTR .	UP .		•	•	4 4	•	,	.TLG .	•	•	•
		DN .		••••••••••••••••••••••••••••••••••••••	•	•		•	TLG .	•		•
6 DD	KSC	UP.		•	•	•	•		.TLG .	•		•
	KSC	UP.		•		•	•		. TLG	•		•
		•	,	•	•	•		·	TLG	•		
,		DN .		•				,	.TLG .			•
6 3D		UP .	•	· · · · · · · · · · · · · · · · · · ·	•	•	•		.TLG .			•
640	KSC	UP.		•	•	•			TLG TLG			

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

			_			1986	er filozofor e e e e e e e e e e e e e e e e e e e	The Control of the Control	<u>Light of the position of the same of the </u>	V 2 V		
FLT	LNCH				PAYLOAD	Para Historia.	Page of The ot your		CHEDEY	SHUTTLE	CARSO	SHUTTLE
N O	SITE	TRIF	CODE	NAME	TYPE	(FB) AEIGHA	L/D (FT/FT)	ORPIT HAZMPZING (NMIZNMIZDEG)	STAGE	WEIGHT.	LENGTH	PERF LOAD FACTOR
65D	KSC	uP .		•	•	•			.TUG	•		
	•	DN .			•	•	,	, , , , , , , , , , , , , , , , , , ,	-TUG	•	•	· • • • • • • • • • • • • • • • • • • •
66 D	KSC	UP.		•	•	• •		•	.TUG	• .		•
	•	DN .		* * * * * * * * * * * * * * * * * * *	•	•			.TUG	•		• • • • • • • •
6 7 D	KSC	UP.		•	•				TLG	• .		•
•		DN .	-		•	•		• • • • • • • • • • • • • • • • • • •	.TLG	• • • • • •		
68D	VTR	UP .	•		•	• •		· · · · · · · · · · · · · · · · · · ·	•			•
•	•	DN .	_		•	•		. • • • • • • • • • • • • • • • • • • •	•	•		• • • • • • • • • • • • • • • • • • •
69D		ÜΡ	•	,	•	• •	4	<u> </u>	•	• •		
•		DN		•••••••••	•	•	* * * * * * * * * * * * * * * * * * * *			•		•
700.		UP .	•		•				• •		<u> </u>	, ,
_		DN	• • • • • • • • • • • • • • • • • • • •	****************	•	• • • • • • •	•	** * * * * * * * * * * * * * * * * * *	• • • •		• • • • • •	
710.	VTR .	UP.	•		•	•	•	Lugar to a street	• •			
•	•	DN	•	••••••••••			• • • • • • • • • • • • • • • • • • • •	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	• • • •		••••••	******

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

	- 21	د کر ا				1986						
E1 7	LNCH				PAYLOAD	3			ENERGY	SPUTTL		SHUTTLE PERF
		TRIP	CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	CREIT HAVHPVINC (NMIVNHIVDEG)	STAGE	WEIGHT	LENETH	•
72D	.WTR	UP .	•	•	•	•	•	•	•	•	• •	•
		DN .			•	•		•	•	•	•	•
73D	• •¥TR	uP.	•	•	•	•	•	•	•	•	•	
	•	DN			•	•		•	•	•	•	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

		10	· · · · · · · · · · · · · · · · · · ·		- 14 16 16 16 16 16 16 16 16 16 16 16 16 16	1987		 By Contract By a substitution of the second of 			بسينون يرسد	
FI T	LNCH			,	PAYLOAD				TNERGY			SHUTTLE PERF
ΝО	SITE	TRIP	CODE	NAME	TYPE	WEIGHT (LS)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)			LENGTH	
1	• •KSC	• • UP	•	0	•	•		•	.TLG	. 62732	35.0	. 998
		DN.	•		a 6	-		•	.TLG	6297	35.6	•
2	KSC		• AST-18 • EO-48	-EXPLORER - SYNC. -SEOS OPERATIONAL	.CDR-R	3085.	11.0/ 7.4	19323/19323/ 28.5 SYNC.EG.		• 57674	58.2	918
	•			INTELSATMAGNETIC HONITOR SAT.		· 4346.	12.2/ 8.3	SYNC.EQ.		11458	57.4	• • • • • • • • • • • • • • • • • • •
3	KSC	. UP	.PL-13	MERCURY ORBITER	LCE-N	8498	34.9/14.7	ESCAPE	:	6498	34.9	.135
,	•	DN	•	0	•	•				0.	0	•
4				SPACE PROCESSING (P) SPACE PROCESSING (P)				. 160/ 160/ 28.5 . 160/ 160/ 28.5		_ 60126.		.957
	-	- ,		SPACE PROCESSING (P) SPACE PROCESSING (P)				160/ 160/ 28.9 160/ 160/ 28.9		16775	45.0	•
5		_	•PL-13	*MERCURY ORBITER	LCE-N	. 8498.	.34.9/14.7.	ESCAPE	•	8498	34.9	135
·	•	. DN		4		•			•	-	D	•
6	KSC			SPACE PROCESSING (P) SPACE PROCESSING (P)				160/ 160/ 28.5 160/ 160/ 28.5		•		957
•	•			SPACE PROCESSING (P) SPACE PROCESSING (P)				. 160/ 160/ 28.5 . 160/ 160/ 28.5	.TLG			• • • • • • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

				<u> </u>		1987							
· · ·				91	YLOAD				<u></u>	ENERG		CARGO	SHUTTLE PERF
	LNCH		CODE	NAME	TYPE	*EIGHT.	L/ (FT/	D . FT) .	OREIT HAVPP	/INC STAGE		LENGTH	LOAD
7	KSC	UP	. AST-8V	LRO REVISIT	.CDR-N	3000.	5.0/	14.C.3	8646/38649/	28.5.TLG	62294	40.0	.991
	•	. DN	.AST-8V .AST-1A			640.			38646/38646/ 297/ 297/	28.5.TUG 28.5.	9937.	52.2	•
8	.KSC	. UP	PHY-1C	EXPLORER HIGH ALT.	LCE-N	1225.	10.4/	6.1.	ESCAPE	.TUG	58936.	45.4	. ,938
	•	DN.		•			•	•		.TLG	6297.	35.0	•
9	KSC	UP	.PHY-38	ENVIRON. PERTUB. SAT.	.CDR-N.	9845	17.3/	10.0.	69L0/ 6900/	55.0.716	43853.	52.3	795
	•	• DN	•	•			•	•	g	. TUG •	6297.	35.0	• •
10	-KSC	UP	•L UN = 3	_AUTO. LUNAR ROVER	.CDE-N.	8700	24.G/	10.0.	ESCAPE	.TUG	49750.	59.0	. 792
	•	. DN	•	•		•				.TLG	6297.	35.C	•
11	-KSC	UP	•E0-48	.SEOS OPERATIONAL .SYNC. METEOROLOGICAL	COR-N.	30 85 1077	10.9/	7.2.	SYNC.EG.	•	59287	56.9	. ,943
	•	_ DN	-NN/D-10	.GEOSYNC. OPERATIONAL MET .LIFE SCIENCES MODULE	LCR .	765 656	10.37	5.0.	SYNC.EO.	.TLG	. 771ê.	58.3	•
12	VTR	UP	• E0-5C	.TIROS N-P .SPECIAL PURPOSE SAT.	CDR-N.	1717. 676.	15.3/ 9.7/	8.C. 4.7.	790/ 790/ 280/ 280/	102.0.TL6	25452.	€0.0	.928
	•	DN	-NN/D-8 -EOP-8	ENVIRONMENTAL MON. SAT	LCR .	1899. 1080.	32.4/	10.2. 6.2.	920/ 920/ 21F/ 216/	163.6.TLG 90.0.	9276.	57.8	• • • • • • • • • • • • • • • • • • •

	-				· · · · · · · · · · · · · · · · · · ·	1987	l tit i waa tit	# 2 P. L. # P. Rev. - 1 1 1 1 1 1 1 1 1		•		
FLT	LNCH			. Ра	YLCAD				ENERGY			SHUTTLE
	SITE		CODE	NAME	TYPE	WEIGHT (LB)	L/0 (FI/FI)	CRRIT HAVRPVINC (NMIVNMIVDEG)			LENGTH	PERF LOAD FACTOR
				.U.S. DOMCOMSAT .FOREIGN COMSAT	CDR-N.	4499. 982.		SYNC.EQ.	. TLG	. 59367.	59.4	.945
	•	DN	-LS-1		LCR .		13.0/ 2.2.	300/ 300/ 28.	5.710	6953	48.C	•
14	KSC			.U.S. DOMCOMSAT .GEOSYNC. OPERATIONAL MET			12.2/ 8.3. 10.3/ 6.D.		•1ug	. 58162.	57.5	925
	•	DN .	•	•	• •				.TUG	6297	35.0	•
15	KSC	UP	• •AST-1A •SP-1B	• EXPLORER - LEO • SPACE PROCESSING (P)	•CCR-R•	649. 6171.	12.2/ 2.6. 5.0/14.0.	. 297/ 297/ 28. 160/ 160/ 28.	5.TUG 5.	60446.		.962
,	•	» DN	•NN/D-3 •SP-18	DISASTER WARNING SAT. SPACE PROCESSING (P)	LCR L	2017。 5239。	31.4/ 8.2. 5.0/14.0.	SYNC-EG. 160/ 160/ 28.	.TUG	13553	51.4	•
16		DN	-EOP-8	-ENVIRONMENTAL MON. SAT, -VECTOR MAGNETOMETER SATVECTOR MAGNETOMETER SAT.	LCR -	1080.	10.4/ 6.2.	216/ 216/ 90.0	 G.TLG	_ 21478. _ 8457.	• • • • • •	
17	KSC	υP .	• AST-6V • LS-1 • LS-1	LST REVISIT .LIFE SCIENCES MODULE .LIFE SCIENCES MODULE .HEAD	.CDR-R. .LCR-R. .LCR-R.	3500 • 682 • 682 • 17434 •	5.0/14.0. 13.0/ 2.2. 13.0/ 2.2. 13.0/ 2.2.	340/ 340/ 28. 300/ 300/ 28. 300/ 300/ 28. 200/ 200/ 28. 200/ 200/ 28.	5. 5. 5.	39749	58.0.	.724
•	•		. AST-SV	-HEAO REVISIT	.CDR .	350C.	5.0/14.0.	340/ 340/ 28. 200/ 200/ 28. 270/ 270/ 28.		26715	32.0	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

		:				1987					•••	
Fi T	L N CH		, the state of the	F	AYLOAD				ENERGY			SHUTTLE
	SITE		CODE	NAME	TYPE	WEIGHT:	L/D (FT/FT)	ORBIT HAZHPZINC (NMIZNMIZDEG)			LENGTH.	
18	.WTR		-E0-3A -SP-1B	EARTH OBS. SATELLITE SPACE PROCESSING (P)	-LCR-R	. 6171.	5.0/14.0.	300/ 300/ 99.0 300/ 300/ 99.0		25249	45.5	924
	• .		.E0-38 .SP-18	.EARTH OBS. SATELLITE .SPACE PROCESSING (P)	-LCR	6213	36.0/10.2.	0.ee \000 \000E		13954	45.5	• • • • • • • • • • • • • • • • • • •
19	• WTR •	•	.SP-1C	*EARTH RESOURCES SAT. *SPACE PROCESSING (P) *SPACE PROCESSING (P)		. 5121	5.0/14.0.	300/ 300/ 97.0 300/ 300/ 97.0 300/ 300/ 97.0	•	29240.	50.5	984
	• •	•	• 2b-1C	_EARTH RESOURCES SATSPACE PROCESSING (P) .SPACE PROCESSING (P)	-LCR	. 4189. . 4189.	5.0/14.0.	300/ 300/ 97.0 300/ 300/ 97.0 300/ 300/ 97.0	•	17093	50.5	• • • • • • • • • • • • • • • • • • •
20	•KSC		• •AST-7V •PHY-5	LSO REVISIT COSMIC RAY LAB				190/ 190/ 28.5 200/ 200/ 28.5		. 50257.	48.5	.792
	•		• AST-7V	LSO REVISIT				190/ 190/ 28.5	•	3500	5.0	•
21	.KSC	UP.	.ast10030	STELLAR ASTRONOMY (P)	-LCR-N	40200.	54.0/14.6.	162/ 162/ 28.5	•	_ 40200.	54.0	644
	•	DN	.AST10030	LSTELLAR ASTRONOMY (P)	_LCR	30570	54.0/14.0	1627 1627 1845		30570	54.C	•
22	KSC		- SP-1C	STELLAR ASTRONOMY (P) SPACE PROCESSING (P) SPACE PROCESSING (F)	• F CB − S	. 5121.	5.0/14.0.	162/ 162/ 28 ±5 162/ 162/ 28 ±5 162/ 162/ 28 ±5	•	_ 33761.	55.0	.570
	• •		-SP-1C	STELLAR ASTRONOMY (P) SPACE PROCESSING (P) SPACE PROCESSING (P)	.LCR	4189.	5.U/14.L.	162/ 162/ 28.5 162/ 162/ 28.5 162/ 162/ 28.5	•	30265	55.0	• • • • • • • • • • • • • • • • • • •

					J*	1987	Little Hart 1997 - 1977	Harrist and the Research of the United States of the Control of th			 	
FLT	LNCH			0	CAOLYA			4. Company of the second se	FAEDGV			SHUTTLE PERF
NO	SITE	TRIP	CODE	. NAME	IADZ	(FS)	L/0 (FT/FT)	ORBIT HAVHPVINC (NMIVNMIVDEC)			LENGTH	
23	KSC	up.	. AST-10K7	STELLAR ASTRONOMY (P)	•LCR-N	29637	48.D/14.C	. 162/ 162/ 28.5	• .	· 29637.	48.0	.522
		DN .	-AST-10K7	STELLAR ASTRONOMY (P)	∍L¢R .	. 29005.	48.C/14.O.	162/ 162/ 28.5	•	28005	48.C.	•
24	KSC	•	. SP-1C	SOLAR PHYSICS (P) SPACE PROCESSING (P) SPACE PROCESSING (P)	.LCR-₽.	5121.	5.C/14.C.	21C/ 210/ 28.5 210/ 21C/ 28.5 21C/ 210/ 28.5	•	35013	60. □	. 639
		•	SP-1C	SOLAR PHYSICS (P) SPACE PROCESSING (P) SPACE PROCESSING (P)	•LCR	4189.	5.0/14.0.	210/ 210/ 28.5 210/ 210/ 28.5 210/ 210/ 28.5		_ 31417.	E D LU	· • • • • • • • • • • • • • • • • • • •
25	KSC		NN/D-15Ä .	SOLAR PHYSICS (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P)	.LC⊃-२.	5171.	5.0/14.0.	21C/ 21C/ 28.5 21C/ 21C/ 28.5 21C/ 21C/ 28.5		35163	35.0	640
•	0		, NN/D-15A	SOLAR PHYSICS (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P)	·LCR .	5239.	5.0/14.0.	210/ 210/ 28.5 210/ 210/ 28.5 210/ 210/ 28.5	_	31562	35.0	•
26	4	DN .		SOLAR PHYSICS (P)				21C/ 210/ 28.5 21C/ 210/ 28.5		36784 27054		
27:	KSC .		NN/D-15A .	HIGH ENERGY PHYSICS (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P)	·LCR-R.	6171.	5.0/14.0.	120/ 120/ 55.0.		33798	40.0	.507
•	•		NN/D-15A	HIGH ENERGY PHYSICS (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P)	.LCR .	5239.	5.0/14.0.	120/ 120/ 55.0		29857	40.6.	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

	-					1987				-		
			· \$	P	AYLOAD						CARGO	SHUTTLE
	LNCH		CODE	N AM E	TYPE	VEIGHT (LB)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)	ENERGY STAGE		LENGTH (FT)	PERF LOAD FACTOR
28	KSC	• • UP	.PHY-6D7	_HIGH ENERGY PHYSICS (P)	-LCR-R	207 20	27.0/14.C.	120/ 120/ 28.5	•	20720	27.0	.379
	•	DN	PH Y-607	.HIGH ENERGY PHYSICS (P)	.LCR	18138	27.0/14.0	120/ 120/ 28.5	•	18138	27.0	
29	•			HIGH ENERGY PHYSICS (P)	-LC2	3059P	45.0/14.0.	120/ 120/ 28.5		39219 30598		
30	•	• • • • •	• • • • • • • •	_ATMOS. SPACE PHY. (L+P) _ATMOS. SPACE PHY. (L+P)	LCR-R	29002	.6U.0/14.0.			. 29002. . 28238.		
31	•	DN		.ATMOS. SPACE PHY. (L+P) .ATMOS. SPACE PHY. (L+P)						. 29002. . 28238.		
32	• .			.ATMOS. SPACE PHY. (L+P) .ATMOS. SPACE PHY. (L+P)						. 29002. . 28238.		
33	•			LIFE SCIENCE (L)				150/ 150/ 28.5 150/ 150/ 28.5		37532 30185		
34	,			LIFE SCIENCE (L)				15C/ 150/ 28.5		. 37532 . 36185		

							1987		in the second of the second of the second				
FLT	LNCH				P	AYLOAC		· · · · · · · · · · · · · · · · · · ·		E NE RGY		CARGO	SHUTTLE PERF
NO	SITE	TRIP	CODE	. NAME		TYPE	∉EIGHT (LE) _,	L/D (FT/FT)	ORBIT HAZHPZINC (NMIZNMIZDEG)		WEIGHT		LOAD
35	KSC	UP	.ST-24	-SPACE TECHNOLOGY	(L†P)	LCR-R	25296	60.0/14.0	200/ 200/ 55.0	•	. 25296.	60.0	.584
	• .	DN	•ST-2A	SPACE TECHNOLOGY	(L+P)	LCR .	24532	60.0/14.C.	200/ 200/ 55.0	•	24532	6 0. 0.	• • • • • • • • • • • • • • • • • • •
36	KSC	UP	. 5 T - 2 B	SPACE TECHNOLOGY	(L+P)	•LCR-R	25296.	60.0/14.0.	200/ 200/ 55.0	•	• 25296.	60.0	584
		_	ST-2B	SPACE TECHNOLOGY	(L+P)	LCR .	24532	60.0/14.0.	200/ 200/ 55.0	•	24532	60.0	· · · · · · · · · · · · · · · · · · ·
37	KSC	UP	•ST-2C	-SPACE TECHNOLOGY	(L+P)	LCR-R	25296	60.0/14.0	200/ 200/ 55.0	•	25296	60.0	. 584
		DN	-ST-2C	SPACE TECHNOLOGY	(L+P)	LCR	24532	60.0/14.0.	200/ 200/ 55.0	•	24532	60.0	
38	KSC	י פטי	ST-2D	SPACE TECHNOLOGY	(L+P)	LCR-R	25296.	60.0/14.0.	200/ 200/ 55.0	•	25296	60.0	.584
		DN	ST-20	SPACE TECHNOLOGY	(L+P)	.LCR	24532	50.0/14.0.	200/ 200/ 55.0	•	24532	60.0	• • • • • • • • • • • • • • • • • • •
39.	KSC .	UP .	AL-AO	OFFICE OF APPLIC.	(L+P)	LCR-R	27002	60.0/14.0.	180/ 180/ 55.0	•	77002	60.0	.583
		DN	0A-1A	OFFICE OF APPLIC.	(L+P)	LCR .	25138	50.0/14.0.	180/ 180/ 55.0	•	26138	60.0	• • • • • • • • • • • • • • • • • • •
40	VTR .	UP .	DA-18	.OFFICE OF APPLIC.	(L+P)	LCR-R	25402.	6U.0/14.G.	160/ 160/ 90.0	•	75402	60.0.	.776
•	•	DN	0A-18	OFFICE OF APPLIC.	(L+P)	LCR .	24538.	60.0/14.0.	160/ 160/ 90.0	• • • • • • • • • • • • • • • • • • •	24538	6D.D.	•
41.	KSC .	UP .	SP-IA	SPACE PROCESSING	(L+P)	LCR-₽	26084.	60.0/14.0.	180/ 180/ 28.5	•	26084	60.0	.499
•	•	DN	SP-1 A	SPACE PROCESSING	(L+P)	LCR .	25320.	60.0/14.0.	180/ 186/ 28.5	• • • • • • • • • • • • • • • • • • •	25320	60.0	******

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

		· ·				1987		TIPEST (CON 1)				
E 1 3	LNCH			P	YLOAD.	Papina paga paga paga		 				SHUTTLE
		TRIF	CODE	NAME	TYPE	VEIGHT (LB)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)	ENERGY Stage		LENGTH	PERF LOAD FACTOR
42	WTR	• UP	NN/D-16A	_EARTH OBSERVATION (L+P)	LCR-R	26502	6U.D/14.C.	180/ 180/ 90.0	•	26502	60.0	.824
,	•	• DN	"NN/D-16A	EARTH OBSERVATION (L+P)	LCR	25638	60.0/14.0.	180/ 180/ 90.6	•	75638	60.6	•
43.	KSC	• UP	• •NN/D-16B	LASTRONOMY (P)	LCR-R	Z6798.	45.0/14.0.	162/ 162/ 28.5	•	26798	45.0	.483
		DN .	• NN/D-16B	ASTRONOMY (P)		25166	45.0/14.0.	162/ 162/ 28.5	•	25186	45.L	•
44.	×5C	. ÚP	• NN/D-16C	GPL 1 (L+P)	LCR-R	26482	60.0/14.0.	200/ 200/ 28.5	•	26482	60.0	525
	•	• DN	- NN/D-16C	-GPL] (L+P)	LCR .	25718	60.0/14.0.	200/ 200/ 28.5	• • • • • • • • • • • • • • • • • • •	25718	FO.C.	•
45.	KSC	• • UP	• NN/D-16D	*GPL 2 (L+P)	LCR-P	26261.	6U.0/14.U.	200/ 200/ 28.5	•	26261.	50.0.	522
	•	DN.	- NN/D-16D	⊕GPL 2 (L+P)	LCR	25497	60.0/14.0.	2007 2007 28.5	• • • • • • • • •	25497	60.0	
4 6D	WTR	. UP	•	•	• •			Andrew Control of the				
	• •	DN	•	* * * * * * * * * * * * * * * * * * *	• • • • • • •	•	•		• • • • • • • • •	• • • • •	•	,
47D -	¥TR	ŲΡ	•	•		4	eletaria de la composición del composición de la composición de la composición del composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la		.TUG		•	
•	,	DN	• • • • • • • • • • • • • • • • • • •	•	•	-	•		TLG	• • • • • • •	•	· • • • • • • • • • • • • • • • • • • •
48D.	VTR .	UP		•	• •	•	•	<u> </u>	•	•	•	
•	•	DN		•	• • • • •	••••••	•		• • • • • • • • •	· · · · · · · · · · · · · · · · · · ·	• • • • • • •	••••••

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

:.4					ing in the section of	1987	Street Additions on the symphosistics		1150 S271 BW-17			<u>.</u>
FLT	LNCH		· · · · · · · · · · · · · · · · · · ·		PAYLOAD	tjar er e t	<u> </u>		E NE RG Y		E CARGO	SHUTTLE PERF
NO	SITE	TRIP	CODE	N AM E	∃ekt	VEIGHT	L/9 (FT/FT)		2DA TZ	WEIGHT	LENGTH (FT)	LOAD FACTOR
4 9 D	. WTR	UP		•	•				TLG		•	
	•	. DN	•	•	•		•	8	.TUG •	•	•	•
	.KSC	. UP	•	•	•	• ~	•		TLG	•	•	•
,	•	. DN	•	•••••••••••••	•	* * * * *			.TLG	•	•	•
5 1 D	•	UP		•		•			.TLG		•	•
	•	. DN	•	•	•	•	والمحالمات	o	.TLG	•	•	•
52D	•	. UP			•	•		, , , , , , , , , , , , , , , , , , , ,	TUG		• • • • • • • • • •	• •
	•	• DN	• ·	•	•	• ·	•		.TUG	•	•	•
		. υΡ	•	, ,		• •		, ,	TU G	•		
,	•	- DN		•	•	* 4	•.	•	-TUG	•	• '	•
54D	WTR	UP	•	•	•	•		•	.TUG	•	•	•
		. DN		, , , , , , , , , , , , , , , , , , , ,	•	•		, , , , , , , , , , , , , , , , , , , ,	.TUG	• • • • • • • • •	- • • • • • • • •	•
•		•	• •	, ,	•	•	•	· ·	•	•	•	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

	<u>, 11</u> - 4,					1987						
FI T	LNCH			Ρ	AYLOAD				ENERGY	SHUTTLI	E CARGO	SHUTTLE PERF
NO	SITE	TRIP	CODE	NAME	TYPÉ	WEIGHT (L8)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)	STAGE	WEIGHT (LB)	LENGTH (FT)	LOAD FACTOR
55D	.xsc	UP	•	•	•	•		•	TUG	•	•	•
	•	. DN	•	•	•	•			.TUG	•		
560	•KSC	up	•	•		•	•	•	.TUG	•	•	•
	•	DN -	•	•	•	•					•	•
570	.KSC	UP	•	:	•	•		•		•	•	•
	•	. DN	•		•			· · · · · · · · · · · · · · · · · · ·	.TUG		•	•
58D	.KSC	• UP	•	•	•		,	•	.TUG	•	•	•
		- DN			•	•			TUG		• • • • • • • • • • • • • • • • • • •	•
59D		• • ប្រ	•	•	•	•		•	.TUG	•	•	•
	•	. DN	• • • • • • • • • • • • • • • • • • •	•	•			• • • • • • • • • • • • • • • • • • •		•	•	
6 CD	WTR	UP	• .	•	•	•	•	•	. TLG	•	•	•
		DN .	• • • • • • • • • • • • • • • • • • •	•	•		•	• • • • • • • • • • • • • • • • • • •	. TLG	• • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • •
6 1 D	KSC	· UP	•	•	•	• •	•	•	TLG	•	•	•
i ,	•	DN	•	•	•	•			.TLG	• • • • • • • • • • • • • • • • • • •	• • • • • • • •	• • • • • • • • • • • • • • • • • • •

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FI T	L N CH			F	CAOLYA	r joglik wiker ≎k	egan teggi je i za znišana	and the second of the second o	CHERCY	SPUTTL	E CAREC	SHUTTLE PERF
NG	SITE	TRIP	CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	ORE IT HAZHPZINC (NMIZNMIZDEG)	STAGE	WEISHT (L3)	LENGTH (FT)	LOAD FACTOR
62D	VTR	υP .		•	9	•		•	•	•	•	• .
	•	DN		•		•		• • • • • • • • • • • • • • • • • • •		•	•	
6 3D	• • WTR	UP			•	•		· ·	•	•	•	•
	•	DN .		•	9	•		* * * * * * * * * * * * * * * * * * *	•	•	•	•
64D	.VTR	UP .		9		•		•	•	•	•	•
	•	. DN .		•	•		•	•	:	:	•	
65D	.¥TR	UP .		•	•			•		•	•	
	•	DN .		•	•			•	•	•	•	•
66D	WTR	UP .		•	•			•	:		•	•
		DN .		a •	*		•	•	:	•	•	•
67D	WTR	UP		•				•	:	•	•	•
		DN .		•	•				•	•	•	•
68D	VTR .	UP .		•	•		•		•	•	•	•
		DN .			•	•			•	•	•	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

			· · · · · · · · · · · · · · · · · · ·		4: "	1987						· · <u></u>
FLT	LNCH			PJ	YLOAD				INERGY	SPUTTL		SHUTTLE PERF
N Q	SITE	TRIP	CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	ORBIT HAVHPVINC (NMIVNMIVDEG)		WEIGHT (LB)	LENGTH	a -
69D	NTR .	UP .		•	•			•			•	•
		DN .		•	•	• . •		, , , , , , , , , , , , , , , , , , ,		•	• • • • • • • • • • • • • • • • • • •	

						1668	de April 1990 - 1			, <u>* - :</u>		
FLT	LNCH			P	AYLCAD	o in the in		B seed By the I	211.5.3.5.1		CARSO	
	SITE		CODE	NAME	TYPE	WEIGHT (LP)	L/D (FT/FT)	CHEIT HAVPPVIN (NMIVNMIVDEG)		AFIGHT	LENGTH	
1	KSC	UP	* PHY-4		.CDE-N	635	16.5/10.0	ESCAPE	.TLG .?-II	57090	54.0.	.908
·	• • •	DN.	•	•		•	•	* 4 * * * * * * * * * * * * * * * * * *	-TLG	6797	35.0	•
2	KSC		• • • • • • • •	•			•	•	TLG	. 62732.	35.0	. 998
	• •	- DN	•	•	•	•	I to the finance of the later.	•	.TLG	. 6297	35.0	•
3.	KSC	UP	-PHY-18 -NN/0-28	EXPLORER MEDIUM ALT. .U.S. DOMCOMSAT	-CDR-N	952 4498	.12.8/ 5.0 .12.2/ 8.3	. SANC'60' 5400' 1000\ 58	.5.TLG		£0.6	.759
•				INTELSAT FOREIGN COMSAT	±009 •00R		12.2/ 9.3 12.2/ 5.8	SYNC.ES.	.7LG	11473	59.4	· • • • • • • • • • • • • • • • • • • •
4.	¥TR	UP	• •PHY-1A •E0-5D	.EXPLORER UPPER ATMOSSPECIAL PURPOSE SAT.	CDR-N.	1587 676	13.3/ 4.0 9.7/ 4.7	1900/ 140/ 90 400/ 400/ 90	.C.TLG	22900	58.C	675
			8-C\NN	-ENVIRONMENTAL MON. SAJ.	LCR	1899.	12.4/10.2	9207 9207103	.C.TLG	8195	47.4	•
5.			• • • • • • • •	AUTO. LUNAR ROVER	.CC=-N.	. 270C.	24.0/16.6.	. FSCAPE	. Tu g	49750	59.0	. 792
•		DN	•	•			-	and continuous or a fine first	. ₹LG	6297.	35.0.	
6.	KSC .	UP .	NN/D-2C	TRACKING AND DATA RELAY	.CDR-N.	974.	17.9/ 6.3.	SYNC.EG.	.Tug	50329	52.9.	.803
•	•			FOREIGN SYNC. METEOROL. .EXPLORER:- LEO	CDR .	765. E40.	10.3/ 5.0. 12.2/ 2.6.	SYNC.EG. 297/ 297/ 28	.TLG	7702	57.5.	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1988	United	• " , ,				
C. 7	LNCH		· · · · · ·	P	AYLOAD		<u>* </u>		5450 GY		CARGO	SHUTTLE
	SITE		CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	GRBIT HAZHPZIN (NMIZNMIZDEG)				PERF LOAD FACTOR
7	KSC	UP		.TRACKING AND DATA RELAY .SPACE PROCESSING (P)						53610	57.9	.853
	•			LIFE SCIENCES MODULE SPACE PROCESSING (P)			5.0/14.0.	300/ 300/ 28 160/ 160/ 28		12192	53.0	• •
8	- K S C	uP		TRACKING AND DATA RELAY SPACE PROCESSING (P)						53610	57.9	.853
	•		•LS-1 •SP-1B	*LIFE SCIENCES MODULE *SPACE PROCESSING (P)				30C/ 30C/ 28 16O/ 16G/ 28		12192	53.0	•
9	KSC			DOMCOMSAT .TRAFFIC MANAGEMENT			12.2/ 8.3. 12.5/10.3.	SYNC.EG. SYNC.EO.	•TUG	61019	59.7	.971
	•		-AST-3	SOLAR PHYSICS MISSION	LCP .	4146.	13.1/11.6.	270/ 270/ 28	.5.TUG .	10443.	48.1	•
10	KSC			.U.S. DOMCOMSAT .FOREIGN COMSAT			12.2/ 8.3		- TLG	. 18625	59.4	933
	•	אם	•	•					.†LG	62917	35.G	•
11	KSC	uP		COMMUNICATIONS R AND D .FOREIGN SYNC. METEOROL.						56502	58.4	899
	•	- DN		•			•			6297		•
12	₩TR	. UP	• NN/D-8 • SP-18	ENVIRONMENTAL MON. SAT. SPACE PROCESSING (P)	.LCR-R	6171.	5.0/14.0.			17236		.641
•	•	DN	•5P-18	SPACE PROCESSING (P)		5239		160/ 160/103	.D.TLG	11536.	40.0	· • • • • • • • • • • • • • • • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

					<u> </u>	1338		Ber exercise bestelling a character	· · · · · · · · · · · · · · · · · · ·	Michael Chair		
FLT	LNCH			. Р	AYLCAD			Bernard 1 v. 3 v. 1 v. 1 v. 1 v. 1 v. 1 v. 1 v.	ELEDOV	SHUTTLE		
NO .	SITE	TRIF	CODE	N AM E		(1 8) %EISHT	L/D (FT/FT)	OPBIT HAVHPVINC (NMIVNMI/DEG)	STAGE	.EIGHT.: (LB) .	ENGTH	LOAD
13	KSC	UP	.NN/D-10 .NN/D-12	-GEOSYNC. OPERATIONAL ME -EARTH RESOURCES SAT.	T.CCR-R.	807 3095,	10.3/ 6.0. 11.0/ 7.4	SYNCLEG. Syncleg.	.TUG	. 54422.	56.3.	. 865
	•	DN .	•	•	•				.TUG	6297.	35.0.	
14	×SC .	UP	.NN/0-12 .NN/0-13	-EARTH RESOURCES SAT. -FOREIGN SEOS			.11.0/ 7.4. .11.C/ 7.4.			50452		
		ON	•		•			,	. TUG	. 5297.	35.0.	•
15	xsc	•	.LS-1	-EXPLORER - LEO -LIFE SCIENCES MODULE -LIFE SCIENCES MODULE -SOLAR PHYSICS MISSION	·LCR-R.	. E82.	13.0/ 2.2. 13.0/ 2.2.	300/ 300/ 28.5 300/ 300/ 28.5	•	16148.	55.8.	_465
	· •		• AST-6	LARGE SPACE TELESCOPE	CCP .	20087	36.3/12.0.	340/ 340/ 28.5	• • • • • • • • • • • • • • • • • • •	- 22583.		
16	KSC	,	.AST-7V	LARGE SPACE TELESCOPE LSO REVISIT FOC. X RAY REVISIT	-008-8-	3500.	5.0/14.5.	1907 1907 28.5		38642	50.0	.712
•				LLSO REVISIT	CCR CDR	3500. 3500.	5.0/14.0. 5.0/14.0.	190/ 190/ 28.5 270/ 270/ 28.5	• • • • • • •	9502	14.5.	
17.	WTR .		SP-18	EARTH OBS. SAT. REVISIT SPACE PROCESSING (P) SPACE PROCESSING (P)	·LCR-R.	5171.	5.0/14.0.	300/ 300/ 99.0	•	76514.	19.5.	.946
•	•		SP-18	EARTH DES. SAT. REVISIT SPACE PROCESSING (P) SPACE PROCESSING (P)	LCR .	5739.	5.0/14.0.	300/ 300/ 39.0. 300/ 300/ 99.0. 300/ 300/ 99.0.		16480	19.5	••••••

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

							1988		**				
<u> </u>					P	YLOAD							SHUTTLE
	SIT		TRIP	CODE	NAME	TYPE	(LP) WEIGHT	L/D (FT/FT)	ORBIT HAZHPZINC (NMIZNMIZDEG)	ENERGY STAGE		LENGTH	PERF LOAD FACTOR
1 6	• V TF	R .	_		.EARTH RESCURCES SATSPACE PROCESSING (P)				300/ 300/ 97.0 300/ 300/ 97.0		25249	45.5	.906
	•	•	-		EARTH RESCURCES SAT. SPACE PROCESSING (P)		5239.	5.0/14.0.	300/ 300/ 97.0 300/ 300/ 97.0		. 13954	45.5	•
19	.KS(c :		.PHY-5V .PHY-607 .SP-1C .SP-1C	-COSMIC RAY LAB REVISIT -HIGH ENERGY PHYSICS (P) -SPACE PROCESSING (P) -SPACE PROCESSING (P)	.LCR-R.	20720. 5121.	27.0/14.0. 5.0/14.0.		•	34462	42.0	.518
	•	•	٠,		.COSMIC RAY LAB REVISIT .HIGH ENERGY PHYSICS (P) .SPACE PROCESSING (P) .SPACE PROCESSING (P)	.LCR	. 18138. . 4189. . 4189.	27.0/14.0. 5.0/14.0.			30016	42.0	•
20	.KS(с:	UP	•ST-1	LONG DURATION EXP. FAC.	-CDR-R	10200	35.5/14.0.	275/ 270/ 28.5	• .	10200	35.5	. 396
	•	•	DN	•	•		•		,	•	9		• • • • • • • • •
21	-KSC	c :	UP	-SP-1C	SPACE PROCESSING (P)	LCR-R	5121	5.0/14.0.	270/ 270/ 28.5	•	5121	5.0	. 343
	•	•		•ST-1 •SP-1C	_LONG CURATION EXP. FACSPACE PROCESSING (P)				270/ 270/ 28.5 270/ 270/ 28.5		- 14389.	40.5	•
22	. WTR	R .	٠	.NN/D-14 .NN/D-14		.LCR-N. .LCR-N.	5062 5062 5121	13.7/12.7. 13.7/12.7. 5.0/14.0.	200/ 200/ 98.0 200/ 200/ 98.0 200/ 200/ 98.0 200/ 200/ 98.0 200/ 200/ 98.0		25428	51.1	891
	•	•		•SP-1C •SP-1C	_SPACE PROCESSING (P) _SPACE PROCESSING (P)	LCR .			200/ 200/ 98.0		8378	10.0	• • •

	_					1998					•	· · · · · · · · ·
FL T	LNCH			ρ	AYLCAD	e y let al constant a secondo d		the state of the s		SHUTTLE	CARGO	
		TRIP	CODE	NAME	TYPE	wEIGHT (L9)	L/D (FT/FT)	ORBIT HAVPPINC (NMI/NMI/DEG)	STAGE		LENGTH (FT)	8
23.	KSC	. UP	.AST10030.	STELLAR ASTRONOMY (P)	-LCR-R	40285	54.0/14.0.	162/ 162/ 28.5	•	40780	54.0	.544
6		• DN	.AST10D30.	STELLAR ASTRONOMY (P)	-LCR	30570	54.0/14.6.	162/ 162/ 28.5		30570	54.0	•
24	KSC	. UP	. AST10K30.	STELLAR ASTRONOMY (P)	.LCR-N.	42702	.55.C/14.O.	162/ 162/ 28.5	•	. u2702.	55.0	673
•		• DN	• AST1GK30.	STELLAR ASTRONOMY (P)	LCR .	31190	55.0/14.0.	162/ 162/ 28.5	* * * * * * * * * * * * * * * * * * * *	31197	55.0	•
25	KSC	. UP	AST-10L	STELLAR ASTRONOMY (P)	LCR-N	41402	57.0/14.0.	162/ 162/ 28.5	•	41402	57.6	.658
•	•	• ON	AST-10L	STELLAR ASTRONOMY (P)	-LCR	31890	57.0/14.0.	162/ 162/ 28.5	•	31990	57.0	•
26.	KSC	. UP	AST-10H	STELLAR ASTRONOMY (P)	LCR-N	40146	37.0/14.0.	162/ 162/ 55.0	•	40145	37.0	.735
•	1	DN	AST-10M	STELLAR ASTRONOMY (P)	-LCR	3Uf34.	37.6/14.6.	162/ 162/ 55.0	•	30534.	37.0.	•
27.	KSC	. UP	AST~11E7.	SOLAR PHYSICS (P)	LCR-N	31004	45.0/14.0.	210/ 210/ 28.5	•	31004	45.0.	.590
•	1	DN .	AST-11E7.	SOLAR PHYSICS (P)	-LCR	29272	45.0/)4.0.	210/ 210/ 28.5	•	29272	45.0	
28.	KZC	• UP	AST11E30.	SOLAR PHYSICS (P)	-LCo-N	41612	52.0/14.0.	210/ 210/ 28.5		41612	52.6	.715
•	•	DN	AST11E30.	SOLAR PHYSICS (P)	LCR	32080.	52.0/14.0.	210/ 210/ 28.5	•	32960		· • • • • • • • • • • • • • • • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

	\ <u>\</u>					1988	2. 20.20					
F1 7	I. N.CH			PA	YLOAD	elle etate il e i e e			FN FR'GY		CARGO	SHUTTLE PERF
	SITE	TRIP	CODE	NAME	TYPE	₩EIGHT (LB)	L/0 (FT/FT)	ORBIT HAZHPZING (NMIZNMIZDEG)		kEIGHT (L9)		g
29	KSC	•	- SP - 1 C	- HIGH ENERGY PHYSICS (P) -SPACE PROCESSING (P) -SPACE MANUFACTURING (P)	.LCR-R	5121.	5.0/14.0.	120/ 120/ 55.0	•	33798	40.0	.607
		•	• SP-1 C	HIGH ENERGY PHYSICS (P) SPACE PROCESSING (P) SPACE MANUFACTURING (P)	-LCR	4189	5-0/14-0-	120/ 120/ 55.0.	•	29862	40.0	•
30	•	• • • • •	• • • • • • • •	-HIGH ENERGY PHYSICS (P) -HIGH ENERGY PHYSICS (P)		• • • • • • •				39218. 10598		
		• 011	• FRI - 6 D 3 U	• ####################################	• LUR .	30330		1207 1207 20 43		. 10177	43.0.	•
31.	KSC	• • UP	• •PHY-7A	.ATMOS. SPACE PHY. (L+P)	.LCR-R.	29002	60.0/14.0.	200/ 200/ 28.5	• .	29002	5 C . C	.555
,		DN	.PHY-7A	ATMOS. SPACE PHY. (L+P)	LCR	28238	6D.0/14.G.	200/ 200/ 28.5.		28239	60.0	•
32		• • • • •		.ATMOS. SPACE PHY. (L+P)						29002	60.0	.635
•		DN .	.PHY-7B	ATMOS. SPACE PHY. (L+P)	.LCR .	. 28238.	.66.6714.6.	200/ 200/ 55.0.	• • •	29238.	60.0	•
33.	WTR	UP .	.PH Y-7C	.ATMOS. SPACE PHY. (L+P)	LCR-R	29002	60.0/14.0.	180/ 180/ 90.0		79002.	60.0	.868
		DN	•PHY-7C	.ATMOS. SPACE PHY. (L+P)	LCR .	28238	.68.0/14.C.	180/ 180/ 90.6.		28238.	60.0.	
34.	WTR .	UP .	-РН Y-7С	ATMOS. SPACE PHY. (L+P)	LCR+R	29002	6U.0/14.C.	180/ 180/ 90.0		29002.	60.5	. 868
•	•	DN .	PHY-7C .	ATMOS. SPACE PHY. (L+P)	LCR -	28238.	6D.6/14.0.	185/ 187/ 90.0.		28239.	60.0.	•

						1988						
FLT	L N CH			. Р	AYLCAD		<u>क्ष</u> ्रिक्षाच्या २ त्राच्यासम्बद्धाराज्यस्य	<mark>की है, कुरहरूक वा —</mark> भेटिंगी क्षेत्रक है <u>है कुन्न</u> संस्थ			CARGO	
	_ ,		- CODE	NAME	TYPE	KEIGHT (EJ)	L/D (FT/FI)	CFBIT HAZHPZINC (NMIZNMIZDEG)			LENGTH	PERF LOAD FACTOR
35	KSC .	UP	-LS-2430	LIFE SCIENCE (L)	LCR-R	37532	.58.5/14.0.	150/ 150/ 28.5		37532	58.5	.600
,	•	» DN	.LS-2A30 ⁴	LIFE SCIENCE (L)	.LCR	30185	.58.5/]4.D.	150/ 150/ 28.		30195.	58.5	•
36	KSC	UP	•LS-2A30	LIFE SCIENCE (L)	LCR-R	37532	58.5/14.0.	150/ 150/ 28.5	•	37532	50.5.	. 600
,		∍ DN	*F 2-5 3 d	LIFE SCIENCE (L)	LCR	30185	.58.5/14.C.	150/ 150/ 28.5	•	30185.	58.5.	•
37.					LCR-R	37532	.58.5/14.C.	150/ 150/ 28.5	•	37532.	58.5.	.600
•		DN	•LS-ZA30	•LIFE SCIENCE (L)	•LCR	30165	.58.5/14.6.	150/ 150/ 28.5	•	30189	58.5.	
384	KSC	UP	-ST-2A	_SPACE TECHNOLOGY (L+P)	.LCR-R.	25296	60.0/14.0.	200/ 200/ 55.0	•	25296	60.8.	584
	•	_	•ST-2A	-SPACE TECHNOLOGY (L+P)	-LCR -	24532	60.0/14.0.	200/ 200/ 55.0	•	24532	60.0.	•••••
39.	KSC.	ÙP.	•ST-28	SPACE TECHNOLOGY (L'+P)	.LCR-R.	25296	60.0/14.0.	200/ 200/ 55.0	•	25296	60.0.	.584
•	•	_	•ST-2B	SPACE TECHNOLOGY (L+P)	-LCR -	24532	60.0/14.0.	200/ 200/ 55.0	•	24532	60.0.	•••••
40.	KSC .	UP.	-ST-2C	-SPACE TECHNOLOGY (L+P)	LCR-R.	25296	60.0/14.0.	200/ 200/ 55.0	•	25296	50.0.	.584
•	•	DN	ST-2C	-SPACE TECHNOLOGY (L+P)	-LCR	24532	60.0/14.0.	260/ 200/ 55.0	•	24532	60.0	
41.	ĸsc •	UP (ST-2D	-SPACE TECHNOLOGY (L+P)	LCR-R.	25296	60.6/14.0.	200/ 200/ 55.0	•	25296	50.0.	.584
:	•	מס	57-20	SPACE TECHNOLOGY (L+P)	LCR .	24532	60.0/14.0.	200/ 200/ 55.0	• • • • • • • •	24532	60.8.	• • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1988							
. .	LNCH			РД	CAOLY					SENERGY	SHUTTLE		SHUTTL
	SITE		CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)		HA/HP/INC NMI/DEG)	9	MEIGHT (LB)	LENGTH	
42.	WTR .	. UP	.OA-1A	OFFICE OF APPLIC. (L+P)	LCR-R	27002	60.0/14.C	160/	160/ 90.0	•	27002	60.0	803
•		. DN	-0A-1A	_OFFICE OF APPLIC. (L+P)	LCR .	26138	60.0/14.C	160/	160/90.0	•	26139	60.0	
43.	KSC	UP	.0A-18	OFFICE OF APPLIC. (L+P)	.LCR-R	25402	60.0/14.0	180/	18C/ 55.0		25402	60.0	561
•		. DN	•0A-18	*OFFICE OF APPLIC* (L+P)	LCR .	24538	60.0/14.0	1807	180/ 55.0	•	24539.	60.0	•
44.	KSC	uP	-SP-1 A	SPACE PROCESSING (L+P)	LCR-R	26084	60.D/14.D	1807	180/ 28.5	•	26084	50.0	. 499
_	•	. DN	.SP-1A	_SPACE PROCESSING (L+P)	LCR	25320	60.0/14.6	180/	180/ 28.5		25320	60.0	•
45.	WTR .	• UP	• NN/D-16A	LEARTH OBSERVATION (L+P)	LCR-P	26502	60.0/14.0	1807	180/ 90.0	•	26502	60.0	.824
		DN	• NN/D-16Å	EARTH OBSERVATION (L+P)	LCR	25638	60.0/14.C	186/	180/90.0	•	_ 25639.	50.0	•
46.	KSC .	UP									32969	50.C	561
•		DN.		ASTRONOMY (P)					162/ 28.5 162/ 28.5	-	20405	50.0	
47.	KSC	. UP	• • NN/D-16C	_GPL 1 (L+P)	LCR-R	26482	.60.0/14.0	200/	200/ 28.5	•	26482	60.0	525
•	•	DN.	•NN/D-16C	•6PL I (L+P)	LCR .	25718	60.0/14.0	268/	2007 28.5	• • • • • • • • • • • • • • • • • • •	25719.	60.D	• • • • • • • •

						1988	AL MARKET STATE		* y (والمروبية المرو	
Ft. T	LNCH			PA	YLOAD		चा <u>त्रा व्यक्तिक</u> ्षेत्रेल		FNERGY			SHUTTLE PERF
	SITE	TRIP	CODE	NAME	TYPE	(F8) AEIGHT	L/D (FT/FT)	CPBIT HA/HP/INC (NMI/NMI/DEG)			LENGTH	a · = ·
48	KSC	• •	• NN/D-15A • NN/D-15B • NN/D-15B • NN/D-15B	SPACE MANUFACTURING (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P)	·LCR~R ·LCR-R ·LCR-R	6171. 5121. 5121.	5.0/14.0x 5.0/14.0x 5.0/14.0x 5.0/14.0x 5.0/14.0x 5.0/14.0x	160/ 160/ 28.5 160/ 160/ 28.5 160/ 160/ 28.5 160/ 160/ 28.5	•	32826	30.0	.556
		•	• NN/D-15A • NN/D-15B • NN/D-15B • NN/D-15B	SPACE MANUFACTURING (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P)	•LCR •LCR •LCR	5239 4184 4184 4184	5.0/14.0. 5.0/14.0. 5.0/14.0. 5.0/14.0.	160/ 160/ 28.5 160/ 160/ 28.5 160/ 160/ 28.5 160/ 160/ 28.5	•	27214	30.0	
490	WTR .	UP ON		•	•	• •			•	•	•	•
5 C D	WTR .	UP .	• • • • • • • •	•	•	• • •		•••••	TLG TLG	•	•	•
5 1D	WTR	DN	•••••	•	•	•			• .	•	•	•
520	VTR .	UP DN	• • • • • • • •	•	•				TUG	•		•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

				, and the second second second second second second second second second second second second second second se		1988						
FI T	LNCH			PA	AFOVO	_			ENERGY	SHUTTL	E CARGO	SHUTTLE PERF
NO.	SITE	TRIP	CODE	NAME	TYPE	WEIGHT	L/D (FT/FT)	CREIT HAZHPZINC (NMIZNMIZDEG)	STAGE	VEIGHT	LENGTH (FT)	LOAD FACTOR
		UP .		•	•		•		.TUG	•	•	
'		DN .		• • • • • • • • • • • • • • • • • • •					-TUG			
	.KSC			•	•		•	•	TUG	•	•	
	•	DN		•					TUG		•	
550	KSC	UP .	•	· /	•		•	•	TUG	•	•	•
		DN		•	•						- -	
56D	KSC	UP .	•	• •	• • • • • • • •			, , , , , , , , , , , , , , , , , , , ,			•	•
	•	ON .		•	•		•	•	• TUG	•	•	•
57D	.WTR	UP .	,	•	•			•	.TUG		•	•
	•	DN	•	• • • • • • • • • • • • • • • • • • •	• • • • • • • •	•		•	.TUG	•	•	•
58D	.KSC	UP .		•	•			•	.TUG	•	•	
	•	DN .		•	•				.TUG		•	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

				The second of the first proceeding the second secon	্ৰ কৰিব কৰিব কৰিব কৰিব কৰিব কৰিব কৰিব কৰি	1988	entrantente (<u>"</u>	्र इस. १५ वर्ष में प्राप्त के प्राप्त के विश्व के प्राप्त के प्राप्त के किया किया है । की	* 2008-15-1 KB	_		
FLT	LNCH				PAYLOAD	yarayara balan b		on at the confirmation of the second second	ENERGY	SHUTTL	E CARGO	SHUTTLE PERF
N O	SITE	TRIP	CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)	STAGE		LENGTH (FT)	
590	.xsc	UP	•	,	•	• •	•	•	.TUG	•	•	•
	•	DN .	•		•	•			TUG	•	•	•
	.xsc	UP	•		•	• •		•	.TUG	-	•	•
	•	DN			•	• 4	•	* * * * * * * * * * * * * * * * * * *	.TUG	•	•	• • • • • • • • • • • • • • • • • • •
61 D	.KSC	UP .	•	·	•	• •		•	.TUG	•	•	•
		DN	-	,	•	• •		· · · · · · · · · · · · · · · · · · ·	.TUG	•	•	•
	-KSC	UP	•		•	• •			בדט פ	•	•	•
,		ON .		**********	•	•	· · · · · · · · · · · · · · · · · · ·		-TUG	•	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • •
	KSC	UP .	•		•	• •		•	.TLG	•	•	•
•		DN .			•	•		• • • • • • • • • • • • • • • • • • •	-1LG .	• • • • • • • • • •	• • • • • • • • •	••••••••••••••••••••••••••••••••••••••
6 4 D	xsc .	UP .	•		•	• •		•	Tile .	•	•	•
		DN .	•		•	•		• • • • • • • • • • • • • • • • • • •	.TLG .	• • • • • • • •	• • • • • • • • •	• • • • • • • • • •
65D	VTR .	UP .			• •	•	•	-	• •		•	•
1		DN .	•	•••••	•	•			• • • • • • • • • • • • • • • • • • •	•	•	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1988						
FL T	LNCH			РА	YLOAD				ENERGY	SKUTTL	E CARGO	SHUTTLE PERF
NO	SITE	TRIP	CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	ORBIT HAZHPZINC (NMIZNMIZDEG)	STAGE	VEIGHT (L3)	LENGTH	LOAD FACTOR
66 D	.wrR	UP		•	•	•		•	•	•	•	
		DN .		•	•	•			•		•	
		uP .	•	•	•	•	•		• •		•	
	•	DN		•	• ,			•	•	•	•	•
		UP .		•	•	• •	. '		• ,		•	•
	•	DN .		• • • • • • • • • • • • • • • • • • •	•	•	•	•	•	•	•	•
		uP .		•	•	• •	•		• •	•	• .	•
		DN .	•••••••		• • • • • • •	• •	•	•	•	•	•	•
700	.WTR	up .		•	:		•		•	•	•	•
	•	DN .	•••••••		• • • • • • •	•	•	•	• • • • • • • • • • • • • • • • • • •	•	•	•

						1999		· · · · · · · · · · · · · · · · · · ·				
FLT	LNCH			P	CAOLYA	11142		en och 2004 utbegrede in da i de gjeling. Disserte som och utbrinden utb	EAEDCA		CARGO	
NO	SITE	TRI	CODE	N AM E	TYPE	WEIGHT (LB)	L/D (FT/FT)	CRBIT HA/HP/INC			LENGTH (FT)	PERF LOAD FACTOR
1.	KSC	up	•	•		•		0	Tug	. 62732.	35.0.	.998
•		- DN	•	•	•			, ,	.TUG	6297	35.0	•
2.	KSC	UP	.E0-48 .E0-49	SEOS OPERATIONAL SEOS OPERATIONAL	CDR-N.	3D85 3085	11.0/ 7.4. 11.0/ 7.4.	SYNC.EG.	.TUG	57636.	57.0	. 917
•	4			→INTELSAT •INTELSAT	CDR .	4346 4346	12.2/ 8.3.	SYNC.EG. Sync.eg.	-TUG	14989.	59.4	• • • • • • •
3.	4		******	LRO REVISIT	CDR-R	3000	5.0/14.0	38646/38646/ 28.	5.TUG	62294	40.0	. 991
•	9	DN		LRO REVISIT EXPLORER - LEO	CDR .	3000 640	5.0/14.0. 12.2/ 2.6.	38646/38646/ 28.5 297/ 297/ 28.5	5.7LG 5.	9937	52.2.	
4.	VTR .	UP	-SP-18	-SPACE PROCESSING (P)	LCR-R	6171	5.0/14.0	160/ 160/ 90.0	i • TLG	. 15187.	40.0	_447
•	• • • • • • • • • • • • • • • • • • •		• SP-18	EXPLORER UPPER ATMOS. SPACE PROCESSING (P)	-CDR -LCR -	1046. 5239.	13.3/ 4.0. 5.0/14.0.	1908/ 148/ 90.0 160/ 160/ 90.0	U_TUG	12582	53.3.	• • • • • •
5.	WTR .		.PHY-1A .SP-18	EXPLORER UPPER ATMOS. SPACE PROCESSING (P)	.CDR-R.	1587. 6171.	13.3/ 4.0- 5.0/14.0.	1900/ 140/ 90.0 160/ 160/ 90.0	TUG	27151	53.3.	800
•	•	DN	•NN/D-8 •SP-1B	.ENVIRONMENTAL MON. SATSPACE PROCESSING (P)	LCR LCR	1899. 5239.	12.4/10.2. 5.0/14.0.	920/ 920/103.0 160/ 160/ 90.0	ETUG .	13435	52.4.	*****
6.1	«sc:		.E0-5E .NN/D-1	SPECIAL PURPOSE SAT.	LCE-N. CDR-R.	67F. 4498.:	9.7/ 4.7. 12.2/ 8.3.	SYNC.EC. Sync.eq.	TUG	61228	56.9.	.974
•	•	DN .	-PHY-18	_EXPLORER MEDIUM ALT.	COR .	848.	12.8/ 5.6.	20066/ 1006/ 28.5	TUG	7145.	47.8.	•••••

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1989		,				
		T	:	PA	YLOAD				ENERGY			SHUTTLE PERF
	LNCH	TRIP	CODE	- NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	ORBIT HA/HP INMI/NMI/D	INC STAGE		LENGTH	
7	KSC	UP		.EXPLORER MEDIUM'ALT.	-COR-R	852 4498	, 12.8/ 5.0 12.2/ 8.3	20000/ 1000/ SYNC-EQ-	28.5.TLG	62153	60.0	. 989
	•				CDR	830	12.2/ 5.8	SYNC.EQ.	.TLG	7127	47.2	•
8	•K2C	• • UP	.PL-14	VENUS LARGE LANDER	LCE-N	6129	25.0/14.	ESCAPE	•TUG	- 55155.	6 0. 0.	.878
	•	DN		•	•	•		•	.†LG	62917		
9	-KSC		.PL-14	_	LCE-N	6129	25.0/14.	ESCAPE		55155	60.0	. 878
	•	. DN		*	•	•	•	•	. TUG •	6297.	35.0	•
10	KZC	. UP	.LUN-4 .SP-1C	_HALO SAT. .SPACE PROCESSING (P)	LCR-R	. 5121.	. 5.D/14.t		28.5.	46097.		733
	•		.SP-1C	-SPACE PROCESSING (P)	LCR	4189	5.0/14.	160/ 160/	28.5.TUG	10485		•
3 1	•KSC	. UP	• NN/D-28 • NN/D-5	.U.S. DOMCOMSAT .FOREIGN COMSAT	.CDR-N	449ª 982	.12.2/ 8.: .12.2/ 5.:	SYNC.EQ. SYNC.EQ.	. TLG	• 62776.	59.4	• •999
	•		-NN/D-10	_GEOSYNC. OPERATIONAL MET	.CDR	765. 656.	10.3/ 6.0	• • • • • • • • • • • • •	.TLG	7718	58.3	•
12	.KSC	• • UP	-NN/D-2B -NN/D-10	.U.S. DOMCOMSAT .GEOSYNC. OPERATIONAL MET	.COR-N.	4498 807	.12.2/ 8. .10.3/ 6.	SYNC.EQ.		. 58903	57.5	937
	•	- DN	-LS-1	LIFE SCIENCES MODULE	LCR	656	13.0/ 2.	2 300/ 300/	28.5.716	6953	. 48.D	•

					1989						•
FLT LNC		4 W.C		PAYLOAD	žio se sego			ENERGY		CARGO	SHUTTLE
NO SITE		tP COD€	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	ORBIT HAZHPZIN (NMIZNMIZDEG:	C STAGE		LENGTH	
13.KSC			FOREIGN SEOS			.11.0/ 7.4. .11.0/ 7.4.			60452	57.0	. 962
•	DI	١ .	•		4			.TUG	6297	35.0	
14.KSC	· Uf	•LS-1 •LS-1	-EXPLORER - LEO -LST REVISIT -LIFE SCIENCES MODULE -LIFE SCIENCES MODULE -HEAO REVISIT	.LCR-R.	3500. 682. 682.	5.0/14.0. 13.0/ 2.2. 13.0/ 2.2.	300/ 300/ 28	3.5. 3.5.	. 18431	52.7	490
•	. Di		LST REVISIT HEAD REVISIT				340/ 340/ 28 20C/ 200/ 28		9502	14.5	• • • • • • • • • • • • • • • • • • •
15. WTR	. UI	-E0-38 -SP-18	-EARTH OBS- SATELLITE -SPACE PROCESSING (P)			· · · · · · - · · - •	300/ 300/ 99 300/ 300/ 99		25249	45.5	.924
	. D!	Y .EO-3C .SP-1B	EARTH OBS. SAT. SPACE PROCESSING (P)				300/ 300/ 99 300/ 300/ 99	0.0.	13954	45.5	
16.WTR	. UF	-NN/D-11 -SP-18	*EARTH RESOURCES SAT. *SPACE PROCESSING (P)				300/ 300/ 97 300/ 300/ 97		. 25249	45.5	.906
:	• DA	-NN/D-11 -SP-18	*EARTH RESOURCES SAT. *SPACE PROCESSING (P)				300/ 300/ 97 300/ 300/ 97		13954	45.5,	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1989							
FLT	LNCH		, 1 + 1 ,	Ρ,	YLOAD					ENERGY	_	CARGO	SHUTTLE PERF
	SITE	TRIP	CODE	NAME	TYPE	(ET)	L/D (FT/FT)	ORBIT HA/HP (NMI/NMI/D				LENGTH (FT)	
17	KSC	•	-AST-7V	.HEAO REVISIT .LSO REVISIT .HIGH ENERGY PHYSICS (P) .SPACE PROCESSING (P)	.CDR-R.	3500. 20720.	5.0/14.0		28.5.	, .	33891	42.0	.612
		•	-AST-7V	.HEAO REVISIT .LSO REVISIT .HIGH ENERGY PHYSICS (P) .SPACE PROCESSING (P)	.CCR .	3500. 18138.	27-0/14-0-	190/ 190/	28.5.	•	30377.	42.0	
18	KSC			COSMIC RAY LAB REVISIT				200/ 200/ 162/ 162/	28.5.		30298	50.0	.570
				COSMIC RAY LAB REVISIT ASTRONOMY (P)				200/ 200/ 162/ 162/			28565	50.0	
19	¥TR		• SP-1C	SPACE PROCESSING (P) SPACE PROCESSING (P)			5.0/14.0. 5.0/14.0.		98.D.		11292	10.0	. 646
		•	.NN/D-14 .NN/D-14 .SP-1B	GLOBAL EARTH AND OCEAN GLOBAL EARTH AND OCEAN GLOBAL EARTH AND OCEAN SPACE PROCESSING (P) SPACE PROCESSING (P)	.LCR .	4744. 4744. 5239.	13.7/12.7.	200/ 200/	98.U. 98.C.	•	2366D	51.1	
20			• • • • • • • •	-STELLAR ASTRONOMY (P) -STELLAR ASTRONOMY (P)				120/ 120/ 120/ 120/			40200 30570		
21				STELLAR ASTRONOMY (P) STELLAR ASTRONOMY (P)		• • • • • •		162/ 162/			. 42702 . 31190		

				<u> </u>		1989	ut a te tast t <u>a jedi</u> a je	eta a mazorena e jaliko ete da ili e e <u>a a a</u> c			
FLT	LNCH			Р	AYLCAD	Tarak Minum Minum Lings	aj de la la <u>alieja</u>		E 1 E 0 C 1		CARGO SHUTTLE
NO	SITE	TRIP	CODE	NAME	TYPE	WEISHT	L/D (FT/FT)	OPBIT HA/HP/INC (NMI/NMI/DEG)	STAGE	WEIGHT	PERF LENGTH LOAD (FT) FACTOR
22	KSC	UP	-AST-10H	-STELLAR ASTRONOMY (P)	LCR-R.	40146	37.0/14.6.	162/ 162/ 55.0	•	40145	37.0735
	•	DN -	-AST-10M	STELLAR ASTRONOMY (P)	LCR	30634	37.0/14.0	162/ 162/ 55.0	•	30634.	37.0.
23.	KSC	UP	.AST-11E7	SOLAR PHYSICS (P)	LCR-R	31004	45.0/14.0	210/ 210/ 28.5	•	31004.	45.0590
		BN	•AST-11E7	SOLAR PHYSICS (P)	LCR _	29272	45.0/14.0	210/ 210/ 28.5		29272.	45.0.
24.	KSC	UP	. AST-13E7	SOLAR PHYSICS (P)	LCR-R.	31004	45.0/14.0	210/ 210/ 28.5	•	31004	45.0590
•		DN .	•AST-11E7 •	SOLAR PHYSICS (P)	LCR .	29272	45.0/14.0.	210/ 210/ 28.5	• • • • • • • • • • • •	29272.	45.0.
25.	KSC .	UP	•AST11E30	SOLAR PHYSICS (P)	LCR-R.	41612	52.0/14.0.	210/ 210/ 28.5	•	41612.	52.0715
•		DN .	-AST11E30	SOLAR PHYSICS (P)	LCR .	32000	52.0/14.0.	210/ 210/ 28.5	•	32000	52.0.
26.	KSC .	•	SP-1C	HIGH ENERGY PHYSICS (P) .SPACE PROCESSING (P) .SPACE PROCESSING (P)	.LCR-R.	5121.	5.0/14.0.	120/ 120/ 55.0 120/ 120/ 55.0 120/ 120/ 55.0		32749.	40.0593
•	•	•	•SP-1C	HIGH ENERGY PHYSICS (P) SPACE PROCESSING (P) SPACE PROCESSING (P)	.LCR .	4189.	5.0/14.0.	120/ 120/ 55.0 120/ 120/ 55.0 120/ 120/ 55.0	•	28812.	40.0.
27.	KSC .	UP .	PHY-6030.	HIGH ENERGY PHYSICS (P)	LCR-R.	39218.	45.0/14.0.	120/ 120/ 28.5		39218.	45.0592
•	•	ON .	PHY-6030.	HIGH ENERGY PHYSICS (P)	LCR	30598.	45.0/14.0.	120/ 120/ 28.5.	• • • • •	30598.	45.0.

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1989						
	4 41 411			P A	YLOAD				FNERGY		CARGO	SHUTTLE PERF
		TRIP	CODE	NAME	TYPE	WEIGHT	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)				
28	KSC	UP	PHY-7A	.ATHOS. SPACE PHY. (L+P)	-LCR-R	29002	60.0/14.0	200/ 200/ 28.5	•	29002	60.0	555
•	•	DN	-PHY-7A	.ATMOS. SPACE PHY. (L+P).	LCR	28239	60.0/14.0	200/ 200/ 28.5	•	28238	60.0	•
29	_			ATMOS. SPACE PHY. (L+P)						29002. 28238.		
30	_			_ATMOS. SPACE PHY. (L+P) _ATMOS. SPACE PHY. (L+P)						29002. 28238.		
31					-L CR			. 150/ 150/ 28.5 . 150/ 150/ 28.5		37532 3D185		
32	•							150/ 150/ 28.5 150/ 150/ 28.5		37532		
33				LIFE SCIENCE (L) LIFE SCIENCE (L)				150/ 150/ 28.5 150/ 150/ 28.5		37532 30185		• • • • • • •
34	_			SPACE TECHNOLOGY (L+P)						25296 24532		

_		!'				1989				***		
				p,	CADJY	eliki ya ika mara		A CONTRACTOR OF THE STATE OF TH	E NE RG Y		CARGO	SHUTTLE PERF
NO	LNCH SITE		CODE	NAME	TYPE	VEIGHT (LB)	L/O (FT/ET)	ORBIT HAZHPZINC (NMIZNMIZEC)		(FB)	LENGTH. (FT)	
35	KSC	. UP	.ST-2B	-SPACE TECHNOLOGY (L+P)	LCR-R	25296.	.60.0/14.5.	200/ 200/ 55.0	•	25296	60.0	584
	•	. DN	.ST-28	SPACE TECHNOLOGY (L+P)	.LCR	24532	.60.0/14.0.	200/ 200/ 55.0	•	24532	60.0	•
36	KSC	. UP	•\$1-2¢	SPACE TECHNOLOGY (L+P)	.LCR-R	25296	.60.0/14.0.	200/ 200/ 55.0	•	25296	60.0	584
	•	- DN	•ST-2C	SPACE TECHNOLOGY (L+P)	.LCR	• 24532 •	.60.0/14.0. •	. 200/ 200/ 55.0 •	•	" 24532. •	60.0	•
37	-KSC	• UP	• •ST-20	SPACE TECHNOLOGY (L+P)	LCR-R	25296	.60.0/14.0	200/ 200/ 55.0	•	. 25295.	60.0	584
	:	. ON	•ST-20	SPACE TECHNOLOGY (L+P)	.L CR	. 24532 •	.60.0/14.0.	200/ 200/ 55.0 •	•	. 24532.	60.0	•
36	.wrR	. UP	AI-AO.	OFFICE OF APPLIC. (L+P)	.LCR-R	27002	.60.0/14.0.	160/ 160/ 90.0	•	27002	60.0	803
	•	a DN	-0A-1A	_OFFICE OF APPLIC. (L+P)	LCR	26138	.60.0/14.0. +	. 160/ 160/ 90.0 •	•	. 26138. •	60.0	•
3 9	.WTR	: UP	.0A-1B	.OFFICE OF APPLIC. (L+P)	.LCR-R	25402	60.0/14.0	160/ 160/ 90.0		. 25402.	60.0	. 77,6
	:	. DN	-0A-1B	.OFFICE OF APPLIC. (L+P)	LCR	24538	.60.0/14.0	160/ 160/ 90.0	•	. 24538	60.0	•
40	-KSC	. UP	•SP-1A	SPACE PROCESSING (L+P)	.LCR-R	26884	.60.0/14.U	. 180/ 180/ 28.5	•	. 26084	60.0	. 499
	•	. DN	•SP-1A	SPACE PROCESSING (L+P)	•LCR	25320	.60.0/14.0.	180/ 180/ 28.5	•	_ 25320 •	. 60.U	•
4)	.WTR	UP	- NN/D-16A	EARTH OBSERVATION (L+P)	.LCR-R	26502	.60.0/14.0	180/ 180/ 90.0		26502	60.0	324
	•	. DN	• NN/D-16A	.EARTH OBSERVATION (L+P)	_LCR	25638	.60.0/14.0.	180/ 180/ 90.0	•	. 2563A	60.0	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1989			.			
<i>-</i>	LNC			РА	AFOVD				F NE RG Y	SHUTTLE		SHUTTL
		TRI	CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)			LENGTH	
42	KSC	: . UP	NN/D-16C	-GPL 1 (L+P)	LCR-R	26482	60.0/14.0	200/ 200/ 28.5	•	_ 26482.	6 0. D.	525
	•	. DN	_NN/D-16C	_GPL 1 (L+P)	LCR .	25718	.60.U/14.0.	200/ 200/ 26.5		25718.	60.0	· • • • • • • • • • • • • • • • • • • •
43	-xsc	. UP	• •NN/D-16D	GPL 2 (L+P)	LCR-R	26261	60.0/14.0	200/ 200/ 28.5	•	26261	60.0	.522
	•	DN.	_NN/D-16D	•GPL 2 (L+P)	LCR	25497	.60.0/14.0.	200/ 200/ 28.5	•	25497	60.0	•
44	KSC	•	• NN/D-15A • NN/D-15A • NN/D-15B • NN/D-15B	-SPACE MANUFACTURING (P) -SPACE MANUFACTURING (P) -SPACE MANUFACTURING (P) -SPACE MANUFACTURING (P)	LCR-R. LCR-R. LCR-R.	5121 6171 6171 5121	. 5.0/14.0. . 5.0/14.0. . 5.0/14.0. . 5.0/14.0. . 5.0/14.0.	. 160/ 160/ 28.5 . 160/ 160/ 28.5 . 160/ 160/ 28.5 . 160/ 160/ 28.5 . 160/ 160/ 28.5	•	32826	30.0	.556
	•		• SP - 1 C • SP - 1 C • NN/D-15A • NN/D-15A • NN/D-15B • NN/D-15B		.LCR . .LCR . .LCR .	4189 5239 5239 4184	5.0/14.0. 5.0/14.0. 5.0/14.0. 5.0/14.0. 5.0/14.0.	. 160/ 160/ 28.5 . 160/ 160/ 28.5 . 161/ 160/ 28.5		. 27224	30.0	
4 SD	. WTR	. UP	• • • • • • • •	•			•	•	•	•		
46D	.WTR	• UP	•	•			•		.TUG	•		
•	•	. DN	•	· • • • • • • • • • • • • • • • • • • •			· · · · · · · · · · · · · · · · · · ·	· = • • • • • • • • • • • • • • • • • •	.TUG	•		• • • • • • • • • • • • • • • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

	-					1989	Kart data gjalania oʻra	B. 32- 2 Set 1 Set	*	1.500	<u> </u>	
FLT	LNC	4		P	AYLOAD	k - L , - T L L			ENF PG Y	SHUTTL	E CARGO	SHUTTLE
NO	SITE	TRIF	CODE	NAME	TYPĘ	WEIGHT (LB)	L/D (FT/FT)	ORBIT HAZHPZINC (NMIZNMIZDEG)	STAGE	WEIGHT	LENGTH	PERF LOAD Factor
470	. YTR	. UP		•	ф ф.	• .			•	•	•	
	•	. DN	•		• • • • • • • •	• • • • • •		• • • • • • • • • • • • • • • • • • •	•	••••••• •	•	
48D	.VTR	. UP	•	•	•	• •			TUG	•	•	
	•	- DN	• •	*	•	•	•		.TLG	•••••••	• • • • • • •	· · · · · · · · · · · · · · · · · · ·
49D	•KSC	- UP	•.	4	•	• •			• • TU G	•	• •	· · · · · · · · · · · · · · · · · · ·
		- DN	•	•	•	•	•		.TUG	•	•	•
	KSC	. UP	•	•	•		•	•	•TUG			,
		DN		• • • • • • • • • • • • • • • • • • • •	•	•	*********	*****			•	•
5 10.	KSC	• UP		•	•				• • TLG	•		
•	•	• DN	• ••••••• •		-	•			. Tl3 .	•		• • • • • •
		•	•	•	•		•		• •			
5 20. •	,	UP DN		• •	•	•	•		TLG .	• • • • • •	•	•••••
•		•	•	•	•	•		,				

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

	ينظبجو				•	1989						
FIT	LNCH				CAOLYAG				E NE RG Y	SHUTTLI	E CARGO	SHUTTLE PERF
NO	SITE	TRIP	CODE	N AM E	TYPE	VEIGHT (LB)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)	STAGE	WE IGHT	LENGTH:	
		UP.			•				TLG	•	•	•
•		DN .			=						•	•
540	VTR	UP		•	•			•	tug	•	•	
	•	DN		• • • • • • • • • • • • • • • • • • •	•				.TUG	• ,	•	
5 5 D	WTR	UP .	•		•			•	TUG	•	•	•
		DN .	• • • • • • •	, , , , , , , , , , , , , , , , , , , ,	•	•			.TUG			
5 60	_	UP .			•	•		•	.TLG	•		•
		DN			•	•			. TLG		•	•
5 7 D	KSC	UP .			•			•	.716		•	•
•		DN .		`	•			,	.7LG			•
saD.		UP		,	•			, , , , , , , , , , , , , , , , , , ,	•	•	•	•
		DN		•	•		•	•	•		•	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1989	. M 1979 18.	en e e e e e e e e e e e e e e e e e e				
FLT	LNCH			, f	PAYLDAD	2.1 : n - 1	** 1 - la		ENERGY	SHUTTL	E CARGO	SHUTTLE PERF
N O	SITE	TRIP	CODE	NAME	TYPE	WEIGHT (L8)	L/D (FT/FT)	ORBIT HAZHPZINC (NMIZNMIZDEG)	STACE	WEIGHT	LENGTH (FT)	LOAD FACTOR
59D	.VTR	UP		•		•	•	•	•	•	•	•
	•	- DN	•	•	0	•	•	•	•	•	•	•
60 D	.VTR	UP			ø .	• .		•	•		•	•
	•	DN .			* · · · · · · · · · · · · · · · · · · ·	•			• • • • • • •	•	•	•
61 D	.WTR	up .			10 0	•			•	•	•	•
	•	DN			0	•		,	•	•	•	
		UP.	_		v	•	•	•	• •	•	•	•
		DN			•	• • • • • • •		,	•	•	•	•
		UP .	•	•	•	• •			•			•
		DN			*	• • • • • • • • • • • • • • • • • • •			•	-	•	• • • • • • • • • • • • • • • • • • •
64D	VTR	UP .			•	• •	•		•	•	•	•
	•	DN		,	•	• • • • • •	•		•	-	•	
65D.	WTR .	UP .			•	• •	•	•			• •	
		DN .	-	, , , , , , , , , , , , , , , , , , ,		• • • • • • • •		••••••••••••••••••••••••••••••••••••••		• • • • • •		

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

	_				·	1880				•			
FI T	LNCH			ρ	AYLOAD					FNERGY		CARGO	SHUTTLE
	SITE		CODE	NAME	TYPE	WEIGHT (LB)	L/ (FT/	D . FT) .	ORBIT HA/HP/INC (NMI/NMI/DEG)			LENGTH (FT)	PERF LOAD FACTOR
1	KSC	. UP		•		•	•	•	(.TLG	. 43605.	35.0	. 594
		• DN	•	•-	•			•			6297		
2	KSC	UP	• •PL-8	_MARS SAT. SANPLE RETURN	LCE-N	16419.	51.5/	14.7.	ESCAPE	•B-II	26453	60.0	. 421
•		. DN	•	•				:		•		٥.	
3.	KSC	• UP	•	•	•	• •	•			TUG	62732	35.0	.998
	•	. DN	•	•	•	•	•	:	• • • • • • • • • • • • • • • • •	TUG .	6297	35.0	• * • • • • • • • • • • • • • • • • • •
4.	KSC			.INTELSAT .INTELSAT	.CDR-R			8.3.	-		62020		.987
•	•			INTELSAT INTELSAT	CDR	4346 4346		6.3~		TUG .	14989	59.4	• • • • • • • • • • • • • • • • • • •
5.	KSC .	. UP	•	•	•			:		Tu 6	62732	35.0	.999
		- DN	•	•	•	• • • • • • •		:	• • • • • • • • • • • • • • • • • • •	TUG .	6297	35.0.	- ^ • • • • • • • •
6.	KSC			.U.S. DOMCONSAT					SYNC.EG. Sync.eg.		53203		. 847
•				.INTELSAT .EXPLORER MEDIUM ALT.				8.3.		•	11491	60.0	. , , , ,

						1990	ومرودة وكالأسيماني	and the second s				
FLT	LNCH			PA	YLOAD				ENERGY	SHUTTLE		SHUTTLE PERF
		TRIF	CODE	N AM E	TYPE	VEIGHT (LB)	L/D (FT/FT)	ORBIT HA/HP/INC				LOAD
7	.WTR	•	.E0-5C	ENVIRONMENTAL MON. SAT. SPECIAL PURPOSE SAT.	LCE-N	676.	9.7/ 4.7.	280/ 280/ 90.0		21945		
	•	• DN	•PHY-1A	EXPLORER UPPER ATMOS.	.COR .	. 104E.	.13.3/ 4.0.	1900/ 140/ 90.0	• TUG	7343	49.3.	
8	. WTR	. UP		EXPLORER UPPER ATMOS. .VECTOR MAGNETOMETER SAT.						22567	58.7	"665
	•	• DN	-NN/D-8	-ENVIRONMENTAL MON. SAT.	_LCR	1899.	.12.4/10.2.	920/ 920/103.0	.TLG	8196	47.4.	
9	.KSC	UP	.PHY-18 .EOP-9	EXPLORER MEDIUM ALT: .MAGNETIC MONITOR SAT.	CDR-R	852. 915.	12.8/ 5.0. 10.2/ 5.8.	.2000C/ 1000/ 28.5 1080/ 540/ 28.0	5.TUG	56069	58.0.	.892
	•			FOREIGN COMSAT FOREIGN SYNC. METEOROL.		765.		SYNC.EG. Sync.eg.	.TUG	7892	57.5.	
10	KSC	UP	•	•	•		•	· · · · · · · · · · · · · · · · · · ·	.TUG	. 42221.	35.0.	.765
	•	• DN	-PHY-3B	LENVIRON. PERTUB. SAT.	-CDR	9290	17.3/10.0	6900/ 6900/ 55.0	D.TUG	15587	52.3	
11	KSC	. UP	.PH Y-38	_ENVIRON. PERTUB. SAT.	CDR-R	9845	17.3/10.0	6900/6900/55.0	I.TLG	43853	52.3.	.795
	•	• DN	•	•	•	•	•		•TUG	6297	35.0.	,
12	KSC	• UP	.L UN-5	LUNAR SAMPLE RETURN	.CDE-N.	11500	24.0/16.6	ESCAPE	.TUG	55791	59.0.	.888
	•	• DN	•	•	•	•	•	•	.TUG	6297	35.0.	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

					1990						
		·	P A	YLOAD		·		TNERGY		CARGO	SHUTTLE
LT LNCH 10 SITE	TRIP	CODE	NAME	TYPE	WEIGHT	L/D (FT/FT)	ORBIT HA/HP/I (NMI/NMI/DEG	NC STAGE		LENGTH (FT)	
13.KSC	UP	.NN/D-28 .NN/D-3		.CDR-N.	4498 2054	12.2/ 8.3. 11.4/ 8.2	SYNC.E0.	. TLG	62186.	58.6	. 989
•	DN.	-AST-1A	EXPLORER - LEO	CDR	640	12.2/ 2.6	297/ 297/ 2	8.5.TLG	6937	47.2	• • • • • • • • • • • • • • • • • • •
14.KSC			TRAFFIC MANAGEMENT	·LCE-N ·COR-R		.12.5/10.3. ,12.2/ 5.8.	SYNC.EG. SYNC.EG.	.TU6	51225	59.7	. 815
•			LIFE SCIENCES MODULE	-LCR	656	.13.0/ 2.2	300/ 300/ 2	28.5.TUG	6953	48.0	•
15-KSC	UP	•NN/D-6		LCE-N	. 807.	.10.3/ 6.0	. SYNC.EQ.	-TLG	• • 57243.	58.4	• •911 •
e .	DN	-LS+1	LIFE SCIENCES MODULE	LCR	656	13.0/ 2.2	300/ 300/ 2		6953	48.0	*
16.KSC			-EARTH RESOURCES SAT.	+CDR-N	3085. 3085.	.11.0/ 7.4 .11.0/ 7.4	SYNC.EG.		61681	. 57.0	• • . •981
•	• DN	.AST-3	SOLAR PHYSICS MISSION	LCR	4146		275/ 270/ 2	28.5.TUG	- 10443	48.1	•
17.KSC	• , •	.AST-6V .LS-1 .LS-1	-EXPLORER - LEO .LST REVISIT .LIFE SCIENCES MODULE .LIFE SCIENCES MODULE .LSO REVISIT	.LCR-R	. 3500 . 682 . 682	5.0/14.0 13.0/ 2.2 13.0/ 2.2	297/ 297/ 2 340/ 340/ 3 300/ 300/ 3 300/ 300/ 3	28.5. 28.5. 28.5.	. 18431	52.7	. 490
•	. DN	.AST-6V .AST-7V	LST REVISIT	CDR CDR	3500. 3500	5.0/14.0. 5.0/14.0.	340/ 340/ 190/ 190/	28.5. 28.5.	9,502	14.5	

	,					1998	i massa (i sejangan sejangan	ti <u>. Pita, maa di B</u> eleb	2.0		·	· · · · · · · · · · · · · · · · · · ·
FLT	LNCH			, Р.	CAOLY				ENERGY			SHUTTLE PERF
	3118		CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	ORBIT HAVHPVING (NMIVNMI/DEG)	STAGE	WEIGHT (LB)	LENGTH	
18	.VTR			-EARTH OBS. SAT. REVISIT -SPACE PROCESSING (P) -SPACE PROCESSING (P)	.LCR-R	. 6171.	5.0/14.0.	300/ 300/ 99.0 300/ 300/ 99.0 300/ 300/ 99.0		26514	19.5	.946
	•	•	•SP-18	.EARTH OBS. SAT. REVISIT .SPACE PROCESSING (P) .SPACE PROCESSING (P)	•LCR	. 5239.	5.0/14.0.	. 300/ 300/ 99.0 300/ 300/ 99.0 300/ 99.0	•	16480	19.5	•
19	.WTR				.LCR-R .LCR-R	. 8630. 6171.	36.0/10.2. 5.0/14.0.	. 300/ 300/ 97.0 300/ 300/ 97.0	•	. 25?49	45.5	.906
	• •	DN	•NN/0-11 •SP-18	-EARTH RESOURCES SATSPACE PROCESSING (P)				300/ 300/ 97.0 300/ 300/ 97.0		<u> </u>	45.5	•
20	KSC			SOLAR PHYSICS MISSION FOC. X RAY REVISIT				. 27C/ 270/ 28.5 270/ 270/ 28.5		7781.	18.1	.369
	•	ON	.AST-98V	FOC. X RAY REVISIT	.CDR .	3500.	5.0/14.0.	270/ 270/ 28.5	•	3500	5.0	
21	KSC		-SP-1B	COSMIC RAY LAB REVISIT .SPACE PROCESSING (P) .SPACE PROCESSING (P)	.LCR-R.	6171.	5.0/14.0. 5.0/14.0. 5.0/14.0.	200/ 200/ 28.5	•	15842	15.6	<u>,</u> 404
		,	.PHY-SV .SP-1B	LHEAD COSMIC RAY LAB REVISIT SPACE PROCESSING (P) SPACE PROCESSING (P)	-CDR .	. 3500. 5239.	5.0/14.0.	200/ 200/ 28.5	•	31192	32.5	•
	•		B.	•	•	•	•	2007 2007 2003	•	•		

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1990.					-	- 	
FLT	LNCH			P	CAOJYA	To the section of the				545054	SHUTTLE	CARGO	
	SITE	TRIP	CODE	NAME	TYPE	VEIGHT	L/D (FT/FT)		HA/HP/INC /NMI/DEG)	FAERGY STAGE			PERF LOAD FACTOR
22	WTR	•	• EOP-8 • SP-1B	.VECTOR MAGNETOMETER SAT. .VECTOR MAGNETOMETER SAT. .SPACE PROCESSING (P) .SPACE PROCESSING (P) .SPACE PROCESSING (P)	.LCR-R. .LCR-R.	1209. 6171. 5121.	10.4/ 6.2.	216/ 216/ 216/	216/ 90.0. 216/ 90.0. 216/ 90.0. 216/ 90.0. 216/ 90.0.	• •	18831	35.8	743
•		•	• SP-1C	SPACE PROCESSING (P) SPACE PROCESSING (P) SPACE PROCESSING (P)	LCR LCR	4189.	5.0/14.0.	216/	216/ 90.0. 216/ 90.0. 216/ 90.0.	•	. 13617.	15.0	••••••
23.	KSC	UP.	• ST-1	LONG DURATION EXP. FAC.	COR-R	18200	35.5/14.0.	275/	270/ 28.5.	•	10200.	35.5.	. 396
_ :		DN	•	- -	•	• • • • • • •	•	•••••	•	•	. 0.		
24.	KSC .	UP .	SP-1C	SPACE PROCESSING (P)	LCR-R.	5121.	5.0/14.0.	270/	270/ 28.5		5121	5.0.	.343
•			SP-1C	LONG DURATION EXP. FAC. SPACE PROCESSING (P)	.CDR .	1020U 4189	5.0/14.0.	27C/ 270/	270/ 28.5. 270/ 28.5.	· · · · · · · · · · · · · · · · · · ·	. 14389.	40.5	, .
25.	YTR .		NN/D-14 NN/D-14 SP-1C	GLOBAL EARTH AND OCEAN GLOBAL EARTH AND OCEAN GLOBAL EARTH AND OCEAN SPACE PROCESSING (P) SPACE PROCESSING (P)	.LCR-R.	5062. 5062. 5121.	13.7/12.7. 13.7/12.7. 5.0/14.0.	200/ 200/ 200/	200/ 98.0. 200/ 98.0. 200/ 98.0. 200/ 98.0. 200/ 98.0.	•	25428	51.1.	891
•	•	-		SPACE PROCESSING (P) SPACE PROCESSING (P)					200/ 98.0. 200/ 98.0.		8378.	10.0.	*****
26.	WTR .	UP .	AST10030	STELLAR ASTRONOMY (P)	LCR-R	40200.	54.0/14.0.	120/	120/ 90.0.		40200	54.0.	.969
•	•	DN .	A5110030.	STELLAR ASTRONOMY (P)	LCR -	30576.	54.0/14.0_	120/	120/ 90.0.	•••••	30570.	. 54-0-	

				Ballagilia, Kalendari, Kalendari	الله والتناوين الب	1990	Park M. P. Comp. Printers. March 18	الوائدة المورول أوالا المناسب المناسبة والمناسبة				*
FI T	LNCH			P	AYLOAD	l l 3			ENEDEN		CARGO	SHUTTLE
	SITE		CODE	NAME	TYPE	FIGHT (LB)	L/0 (FT/FT)	ORBIT HAZHPZINC (NMIZNMIZDEG)	STAGE		LENGTH (FT)	
27	KSC .	•	-SP-1C	STELLAR ASTRONOMY (P) SPACE PROCESSING (P) SPACE MANUFACTURING (P)	.LCR-R.	5121	. 5.0/14.0.	162/ 162/ 28.5 162/ 162/ 28.5 162/ 162/ 28.5	•	34811	55.0	,582
	•	•	. SP-1C	STELLAR ASTRONOMY (P) SPACE PROCESSING (P) SPACE HANUFACTURING (P)	.LCR .	4189		162/ 162/ 28.5	• .	31315	55.0	
28	•			-STELLAR ASTRONOMY (P) -STELLAR ASTRONOMY (P)			• • • • • • • • • •	162/ 162/ 28.5		42702. 31190.		
29	•			SOLAR PHYSICS (P)				210/ 210/ 28.5 210/ 210/ 28.5		31004		
30	•	• • • • •	• • • • • • • •	SOLAR PHYSICS (P)	• • • • • • •			210/ 210/ 28.5		41612		
31	KSC	•	-NN/D-15A	HIGH ENERGY PHYSICS (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P)	.LCR-R.	6171.	5.0/14.0.	120/ 120/ 55.0	•	34848	40.0	.621
			• NN/D-15A	.HIGH ENERGY PHYSICS (P) .SPACE MANUFACTURING (P) .SPACE MANUFACTURING (P)	.LCR .	5239.	5.0/14.0.	120/ 120/ 55.0	•	30912	40.0	

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

	A		200 a 1 20 a 4 a 4 a 4 a 4 a 4 a 4 a 4 a 4 a 4 a			199C	<u> </u>	<u></u>		والتحارضا والأخاذان		_
FLT	LNCH			PA	YLOAC	Andrew Control	en en en en	**************************************	SNERGY	SHUTTLE	CARGO	SHUTTLE
	SITE		CODE	NAME	TYPE	VEIGHT	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)		MEIGHT (LB)	LENGTH (FT)	
32	KSC	•	•NN/D-15A •NN/D-15B	HIGH ENERGY PHYSICS (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P) SPACE MANUFACTURING (P)	.LCR-R	. £171.	5.0/14.0. 5.0/14.0.	120/ 120/ 28.5 120/ 120/ 28.5	•	37133	42.0	.569
•		-	.NN/D-15A (.HIGH ENERGY PHYSICS (P) .SPACE MANUFACTURING (P) .SPACE MANUFACTURING (P) .SPACE MANUFACTURING (P)	LCR LCR	5239 4184	5.0/14.0. 5.0/14.0.	120/ 120/ 28.5 120/ 120/ 28.5	•	31745	42.0	
33	•	• • • • •		.HIGH ENERGY PHYSICS (P) .HIGH ENERGY PHYSICS (P)				***********		. 39218. . 30598.		
34	•			ATMOS. SPACE PHY. (L+P) ATMOS. SPACE PHY. (L+P)				*************		29002 28238	*****	
35	• .		• • • • • • • •	ATMOS. SPACE PHY. (L+P) -ATMOS. SPACE PHY. (L+P)						29002 28238		
36	• ,		• • • • • • • •	ATMOS. SPACE PHY. (L+P)	•••••				• • • • • •	29002. 28238.		
37.				ATMOS. SPACE PHY. (L+P)			•••••			29002 28238		

						1990			eter Stagen de			
FL T	LNCH			. P.	AYLOAD		وفي المنظل المنظم المنظم المنظم المنظم المنظم المنظم المنظم المنظم المنظم المنظم المنظم المنظم المنظم المنظم ا		ENERGY	SHUTTLE	CARGO	SHUTTLE PERF
NO	SITE		CODE	NAME	TYPE	VEIGHT (L8)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NHI/DEG)		WEIGHT	LENGTH (FT)	
38	-KSC	. UP	•F2-5730	LIFE SCIENCE (L)	-LCR-R	. 37532.	.58.5/14.0.	150/ 150/ 28.5	•	37532	58.5	.600
	•	. DN	•LS-2A30 •	LIFE SCIENCE (L)	LCR	30185	.58.5/14.D.	150/ 150/ 28.5	•	30185	58.5	•
39	-KSC	UP	LS-2A30	LIFE SCIENCE (L)	LCR-R	37532	58.5/14.0	150/ 150/ 28.5	•	37532	58.5	-600
	•	DN .	•LS-2A30 •	LIFE SCIENCE (L)	.LCR	30185	.58.5/14.0.	150/ 150/ 28.5	•	30105	58.5	
40	•		• • • • • • • •	LIFE SCIENCE (L)		• • • • • •		150/ 150/ 28.5 150/ 150/ 28.5		37532.		
41	•		• • • • • • • •	SPACE TECHNOLOGY (L+P)			• • • • • • • • • •	**********		. ?529€.		
	•	DN .	• 5 T-2A •	SPACE TECHNOLOGY (L+P)	■LCR	• 24532 • .	.60.0/)4.0.	. 200/ 200/ 55.0	•	24532.	60.0	•
42	KSC	UP .	• 51-28	SPACE TECHNOLOGY (L+P)					• • • • • •	25296	60.0	584
	•	DN	•ST-2B	-SPACE TECHNOLOGY (L+P)	•LCR	. 24532. •	.60.0/14.C.	. 200/ 200/ 55.0	•	24532	80.0	•
43	KSC	UP.	.st-2c	SPACE TECHNOLOGY (L+P)	LCR-R	. 25296.	.60.0/14.0	20D/ 20D/ 55.C	• •	25296	60.C	584
	• •	DN	ST-2C	-SPACE TECHNOLOGY (L+P)	LCR .	24532.	60.0/14.6.	20C/ 200/ 55.C	•	24532	60.0	
44	KSC	UP .	ST-20	SPACE TECHNOLOGY (L+P)	LCR-R	25296	6C.C/14.0.	200/ 200/ 55.0	•	25296	60.0	584
	•	DN .	.ST-20	SPACE TECHNOLOGY (L+P)	LCR .	24532	.60.0/14.C.	200/ 200/ 55.0	•	24532.	60.0	'

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1990			_	•		
FL T	LNCH			Ρ	AYLOAD	ASSESSED ASSESSED.	**************************************	and the state of t			CARGO	SHUTTL
		TRIP	CODE	NAME	TYPE	VEIGHT	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)	ENERGY STAGE			PERF LOAD FACTOR
45.	KSC	. UP	-0A-1A	OFFICE OF APPLIC. (L+P)	-LCR-R	27002	60.6/14.0	180/ 180/ 55.0		27002	€0.0	583
•		• ON	.0A-1A	OFFICE OF APPLIC. (L+P)	LCR	26138	.60.0/14.0.	180/ 180/ 55.0		26138.	€ 0. 0.	• • • • • • • • • • • • • • • • • • •
46	WTR	uP	.0A-1B	OFFICE OF APPLIC. (L+P)	LCR-R	25402	60.0/14.0.	160/ 160/ 90.0	•	25402	60.6	.776
			-0A-18	_OFFICE OF APPLIC. (L+P)	•LCR	24538	60.0/14.0.	160/ 160/ 90.0	•	24538	60.0	• • • • • • • •
47.	KSC	UP	•SP-1A	SPACE PROCESSING (L+P)	LCR-R	28084	EU.6/14.0.	180/ 180/ 28.5.		26084	60.0.	. 499
_	• •	- DN	-SP-1A	SPACE PROCESSING (L+P)	LCR	25320	6U.G/14.G.	180/ 180/ 28.5		25320	60.0	• • • • • • • •
48-	YTR .	UP	- NN/D-16A	-EARTH OBSERVATION (L+P)	LCR-R	26502	60.0/14.0.	180/ 180/ 90.0		26502	60.0	. 824
•	•	DN	NN/D-16A	-EARTH OBSERVATION (L+P)	LCR .	2563 8.	60.U/14.E.	180/ 180/ 90.0.		25638.		•
49.	KSC	UP	• NN/D-16B • NN/D-15B		LCR-R	. 2679 8.	45.0/14.0. 5.0/14.0.	162/ 162/ 28.5. 162/ 162/ 28.5.		31919.		.548
•	•			.ASTRONOMY (P) .SPACE MANUFACTURING (P)				162/ 162/ 28.5. 162/ 162/ 28.5.		29350	50.0	•
50	KSC	UP	NN/D-16C	GPL 1 (L+P)	LCR-R	26482	.60.0/14.0.	200/ 200/ 28.5.		26482	€0.0.	525
•	4	DN	NN/D-16C	'∍GPL 1 (L+P)	LCR .	25718.	60.0/14.0.	200/ 200/ 20.5		25718.	60.0	•
51.	ĸsc .	UP	NN/D-15B	SPACE MANUFACTURING (P)	•LCR-R.	5121	5.0/14.0.	160/ 160/ 28.5.		5121	5.0.	.230
:		DN	NN/D-15B	SPACE MANUFACTURING (P)	-LCR -	4184	5.0/14.0.	160/ 160/ 28.5.	· • • • • • • • • • • • • • • • • • • •	4184.	5.0.	•

						1990	والمعادية المتاهدي والمتاهد	Maria Araba III. <u>I Maji Maji da p</u> ereba				
FLT	LNCH			. P.	YLOAD	<u> </u>				SHUTTLE	CARGO	SHUTTLE
NO	SITE	TRIP	CODE	NAME	TYPE	VEIGHT (L8)	L/D (FT/FT)	CRBIT HAZHPZINC (NMIZNMIZDEG)	ENERGY STAGE	(LB)	LENGTH	PERF LOAD Factor
52	•	UP		• •				•	.xTUG	61473	35.0.	.978
	•	DN .		•	•	•	•	•	•	D.	-0-	******
53	KSC	UP	PL-23	JUPITER SAT. ORB./LAND.	LCE-N	35795	48.3/14.7	ESCAPE	11-9-	45829	56.8.	.729
	• •	DN .		•		# 1 # 0 # 0 # 0 # 0			•	3.		• • • • • • •
540	WTR	UP .	,	•	•			والموائد والمحاول المحاول	•		•	
,		DN .		**************************************	•	•	•		• • • • • •	• • • • • • • • • • • • • • • • • • • •	•••••••	•••••
55D	VTR	UP .	•		• .	• •	*		.TUG			
•	• •	DN .	*******	••••••••••••••••••••••••••••••••••••••	• •	• • • • • • • • • • • • • • • • • • •	•		716	• • • • • • • •	•	• • • • • •
56D.	YTR .	UP .	•		•	- a	•		•	•	•	
•	•	DN .	••••••		•		• • • • • • • • • •		•		•••••••••••••••••••••••••••••••••••••••	
5 70.	WTR .	UP .	•									,
•	•	DN .	•••••••	•••••	•		•		TUG	•	•	• • • • • •
5 8 D •	KSC .	up .					•		T) C	•	•	
•	:	DN .			•		•		TLG .		•	
•					•	•	•	•	TLG .	•	•	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

A CONTRACT OF THE STATE OF THE	ta et el com	ar r	er allen ger er i de de e <mark>n de la de en de en de en de en de en de en de en de en de en de en de en de en de en d</mark>		1990						
FLTLNCH			PAY	LOAD	The state of the s			ENERGY	SHUTTL	E CARGO	SHUTTLE PERF
NO SITE	TRIP	CODE	N AM E	TYPE,	WEIGHT: (LP)	L/0 (FT/FT)	ORBIT HAZHPZINC (NYIZNMIZDEG)	STAGE		LENGTH	LOAD FACTOR
san ksc	UP .	•			•		•	.TLG	•	•	
•	. DN .					•				•	• • • • • • • • •
60D.KSC	. UP .		-		•	•			•	•	•
•	. DN				· · · · · ·						•
6 1D. KSC	UP .	•				•	•	. TLG	•	•	•
•	. DN	•				•		TLE	•	•	
6 2D. KSC		•						.TLG	•	•	
•	• DN •	•			•	•				• •	•
630. WTR	UP :	•	•	•	•	•		. TLG .	•	•	
•	- ON -	•	•	•		•		.TLG .			
64D.KSC	UP .	•					,	TUG			
	DN .	•		•		•		TUG			•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						·	1990		The Control of the Co				
FLT	LNC	н			. Р	AYLOAD	11 . 2 .	4		ENERGY	SHUTTLE	CARGO	SHUTTLE PERF
NO	SIT	E	TRIP	CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	ORBIT HAZHPZINC (NMIZNMIZDEG)	STAGE	WEIGHT (LB)	LENGTH (FT)	LOAD FACTOR
65 D	KSC		UP	•	•	•	• .		•	.Tug	•	•	•
<u>.</u>	•	•	DN		•	•	• .			.TUG	•	•	• • • • • • • • • • • • • • • • • • •
	•KSC	•	UP .			•	• .	•		Tug	•	•	•
	•	•	DN .		• • • • • • • • • • • • • • • • • • •	•	•	,		.TUG	•	• • • • • • • • • • • • • • • • • • •	
670	.KZC	•	UP .	•	•	•	• •		•	.TUG	•	•	•
	•	•	DN		• • • • • • • • • • • • • • • • • • •	•	• • • • • •	•	, , , , , , , , , , , , , , , , , , ,	.TUG	• • • • • • • • • • • • • • • • • • •	•	• • • • • • • • •
	-KSC	•	UP .			•	• •		***************************************	• •TUG	•	•	•
	•	0 0	אם		, ,	· · · · · · · · · · · · · · · · · · ·	• • • • •		· • • • • • • • • • • • • • • • • • • •	.TUG	•	•	•
	.KSC	•	UP .	•	•	•	• •	•		.TUG	•	•	
	•	•	DN .	•	• • • • • • • • • • • • • • • • • • •				· · · · · · · · · · · · · · · · · · ·	.TUG	•	•	• • • • • • • • • • • • • • • • • • •
	KSC	•	UP .	•	•	•	•			.TUG			·
	•	•••	DN .	•	•	•	•			.TUG	• • • • • • • • • • • • • • • • • • •	•	•
710.	KSC	•	UP.	•		•		·		TLG .	•		
•	•	•	DN .	• • • • • • • • •		• •		•		TLG .	• • • • • • •		• • • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

	A 174		,			1990			-	_		•
٠				PA	VLCAD				ENERGY	SHUTTLE	CARGO	SHUTTLE PERF
NO.	SITE	TRIP	CODE	NAME	TYPE	¥EIGHT (LB)	L/D (FT/FT)	ORBIT HAVPPVINC (NMIVNMIVOEG)	STAGE	VEIGHT	LENGTH. (FT)	LOAD FACTOR
72D	WTR	UP	•					•	•	•	•	• •
	•	. DN	•	•	•	• •	•	•	•	•	•	•
730	WTR	. UP		•	• • • • • • • •	•		• •	•	•	•	
	•	. DN	•	•	•	• •			•	•	•	•
74D	.VTR	. UP			• •	• •	·		•	•	•	
,	•	. DN	•	•	•	•	•	•	•	•	•	•
750	WTR	. UP				•	•			• • • • • • • • • •	•	• •
		. DN	•	•	•	•	•	•			•	•
	.¥TR	. UP			• • • • • • • •	• •	•		• • •••••		•	
	•	- DN	-DST-D	•	•	• •	• •	•			•	•
	WTR	. UP	•	•			•	• • • • • • • • • • • • • • • • • • • •		• • • • • • • • •	•	• • • • • • • • •
		• DN	•	•	•	• •			•		•	•

						1991	1 35 1 1 1 1 1 1 1 1 1	The state of the s				
FLT	LNCH			P	AYLOAD	11	Time to the second second				CARGO	
NO	SITE	TRI	P CODE	NAME	TYPE	¥EIGHT (L9)	L/D (FT/FT)	ORBIT HAZEPZINC (NMIZNMIZDEG)	SI, TREY STAGE		LENGTH	PERF LOAD Factor
1	.KSC	. UP		•			-	•	TLG	43605	35.0	694
	•	. DN	•	•	•		•		.TLG	6297	35.0	•
2	KSC	• UP	•PL-8	MARS SAT. SANPLE RETURN	LCE-N	16419	51.5/14.7.	ESCAPE	B-II	26453	€0.6	.421
	•	- DN	•	•				· · · · · · · · · · · · · · · · · · ·	•	3.	.0.	
3	KSC		.PHY-28	GRAVITY/RELATIVITY SAT.	LCE-N	3372	12.0/ 5.3.	ESCAPE	-TUG -8-11		55.5	.606
,	•	. DN	•	•	•		•		_TUG	6297	35.0	
4.	•	• • • • •	• • • • • • • •		CDR-R	3006	5.C/14.C.	.36646/36646/ 28.5	-TUG	62294	40.0.	.991
•		•		LRO REVISIT EXPLORER - LEO	.CDR .	3000. 640.	5.0/14.0.	39646/38646/ 28.5 297/ 297/ 28.5	116	9937	52.2	
5.	WTR	UP	-NN/D-8 -EG-50	ENVIRONMENTAL MON. SAT	.LCR-R.	2024. 676.	12.4/10.2. 9.7/ 4.7.	920/ 920/103.0 400/ 400/ 90.0	-TLG .	22134		.652
		DN	-PH Y-1 A	*EXPLORER UPPER ATMOS.	.COR	1046	13.3/ 4.0.	1900/ 140/ 90.0	TLG	7343	48.3.	
6	WTR			*EXPLORER UPPER ATMOS ** *SPACE PROCESSING (P)	-CDR-R.	1587. 6171.	13.3/ 4.0. 5.0/14.0.	1900/ 140/ 90.0 160/ 160/ 90.0	TUG	23258	53.3.	. 685
•		DN	.NN/D-14 .SP-18	-GLOBAL EARTH AND OCEAN -SPACE PROCESSING (P)	LCR .	5239.	13.7/12.7.	200/ 200/ 98.0 160/ 160/ 90.0	TUG .	16280	53.7.	• • • • • •

						1991		,				
FLT	LNCH				PAYLOAD			· · · · · · · · · · · · · · · · · ·	SAEDON		CARGO	
	SITE		CODE	N AME	TYPE	WEIGHT	L/D (FT/FT)	ORBIT HAVHPY	ENERGY INC STAGE 6)		LENGTH	PERF LOAD FACTOR
7	.KSC	UP	.E0-48 .NN/D-10	SEOS OPERATIONAL GEOSYNC. OPERATIONAL	.CDR-N.	3085. 807.	11.0/ 7.4 10.3/ 6.0.	SYNC.EG.		61551	56.3	.979
,	•	. DN	.PHY-18 .NN/D-5	EXPLORER MEDIUM ALT. FOREIGN COMSAT	CDR COR	848. 83D.	12.8/ 5.C. 12.2/ 5.8.	2000C/ 100G/ ; SYNC.EQ.	28.5.TUG	7975	60.0	• • • • • • • • • • • • • • • • • • •
8	•	•	. E0-48	.EXPLORER MEDIUM ALTSEOS OPERATIONAL	.CDR-N.	30 85 .	11.0/ 7.4.	SYNC.EO.	28.5.TUG	58989	58.8	.937
•		- אם	+NN/D-10	_GEOSYNC. OPERATIONAL M _LIFE SCIENCES MODULE	ET-COR -	765. 656.	10.3/ 6.0. 13.0/ 2.2.	SYNC.FO.	.TUG ?8.5.	7718	58.3.	•
9.	, ,			LUNAR SAMPLE RETURN	.CDE-N.	11506.	24.6/16.6.	ESCAPE	TUG .	55791	59.0	. 888
•	•	. DN	•	•	•	•	•		• TLG	G 29:7.		
10	•	•	•NN/D-5	LINTELSAT FOREIGN COMSAT	•CDR-R•	982.	12.2/ 5.8.	SYNC.EQ. SYNC.EG.	• TLG	59367	59.4	.945
•		. DN		LIFE SCIENCES MODULE		656.	13.U/ 2.2.	300/ 300/ 2		6953	48.0.	•
11.	KSC .	UP .	A L-T ZA .	INTELSAT - LEO	- CDR-R-	649.	12.2/ 2.6.	SYNC.EG. 297/ 297/ 2	TUG .	57428	59.4	-914
•	•	מפ			-	•			.Tug	6297.	35.0.	
12.	KSC .	UP .	NN/D-2B.	.U.S. DOMCOMSAT .SPACE PROCESSING (P)	CDR-N.	4498. 6171.	12.2/ 8.3. 5.0/14.0.	SYNC.ES. 160/ 160/ 2	.TUG .	62197	52.2.	.990
•	•		SP-18	SPACE PROCESSING (P)	+LCR	5239.	5.U/14.G.	160/ 160/ 2	8.5.TUG .	11536.	40.0.	•••••

			· .		1 - 1/20 - 1	1991		<u> Тим у так 1, по стом</u>		1		<u></u>
FL T	LNCH		·	. Р	DAGIYA		The second second second	_e	ENERGY		CARGO	HUTTLE PERF
		TRIP	CODE	NAME	TYPE	⊀EIGHT ∦EIGHT	L/D (FT/FT)	ORBIT HAVHPVING (NMIVNMIVDEG)			LENGTH	
13	KSC	. UP	•NN/D-13 •LS-1	FOREIGN SEOS LIFE SCIENCES MODULE					.TLG	53688	59.8.	.854
	· -	. ON	•	•		• • •	• • • • • • • • • • • • • • • • • • •		.TLG	6297	35.0.	
14	KSC	•		LST REVISIT .FOC. X RAY TELESCOPE .LIFE SCIENCES MODULE .HEAO	.CDR+R .LCR-R	. 17434. . 682.	.17.5/14.0. .13.0/ 2.2.			50299	57.5.	.839
	•	DN	-AST-6V	LST REVISIT	CER	3500	. 5.0/14.U.	340/ 340/ 28.5		6002	9.5.	
15.	WTR	•	. SP-1B	.EARTH OBS. SAT. .SPACE PROCESSING (P)					•	25249	45.5.	-924
		• DN	-	.EARTH OBS. SATELLITE .SPACE PROCESSING (P)				300/ 300/ 99.0 300/ 300/ 99.0	•	. 13954.	45.5.	
16	VTR			.EARTH RESOURCES SAT. .SPACE PROCESSING (P)				300/ 300/ 97.0 300/ 300/ 97.0	•	25249	45.5.	.906
				LEARTH RESOURCES SAT. SPACE PROCESSING (月)				300/ 300/ 97.0 . 300/ 300/ 97.0	•	_ 13954_	45.5.	
17.	KSC	•		.LSO REVISIT .COSMIC RAY LAB REVISIT .SPACE PROCESSING (P)	.CDR-R	. 35QC.	. 5.0/14.0.		•	13171	15.0.	.372
•	•	•	.AST-7V .PHY-5V	LESO REVISIT COSMIC RAY LAB REVISIT SPACE PROCESSING (P)	.CDR .	. 3500.	. 5.0/14.0. . 5.0/14.0.	200/ 200/ 28.5 190/ 190/ 28.5 200/ 200/ 28.5 190/ 190/ 28.5	•	29453	32.5.	• • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

	gradice gyr, sy	<u>a 125</u>	and the second	en de serie de la companya <u>en la de</u> ria de Augusta, la Serie Valla de la companya del companya de la companya de la companya del companya de la companya del companya de la companya de la companya de la companya de la companya del companya de la companya del companya de la companya de la companya de la companya de la companya del companya de la companya de la companya de la comp		1991			·	•		
FI T	LNCH			PA	YLOAD				SNERGY		CARGO	SHUTTLE PERF
		TRIP	CODE	NAME	TYPE	WEIGHT (LB)	L/D (FT/FT)	CRSIT HAVHPVING INMIVNMIVDEG)			LENGTH.	LOAD
18	KSC	. UP	•	•		•	•		•	. 0.	.0.	. 288
	•	DN .	.AST-9B	FOC. X RAY TELESCOPE	-	-	53.0/14.0.		•	23872	53.0	•
19	VTR	•	. SP-1 C	SPACE PROCESSING (P)	• L CR-R	• 5121. • 5121.	5.0/14.0. 5.0/14.0.	2007 2007 98.0 2007 2007 98.0 2007 2008 98.0	•	16413	15.0	738
	•	•	.NN/D-14 .SP-18 .SP-1C	GLOBAL EARTH AND OCEAN GLOBAL EARTH AND OCEAN SPACE PROCESSING (P) SPACE PROCESSING (P) SPACE PROCESSING (P)	.LCR .LCR .LCR	• 4744. • 4744. • 5239. • 4189.	13.7/12.7. 13.7/12.7. 5.0/14.0. 5.0/14.0.	200/ 206/ 98.0 206/ 206/ 98.0 206/ 206/ 98.0 206/ 206/ 98.0 206/ 200/ 98.0 200/ 200/ 98.0	•	23105	42.4	• • • • • • • • • • • • • • • • • • •
20	KSC	UP	.AST10030	-STELLAR ASTRONOMY (P)	LCR-R	40206.	54.0/14.0.	162/ 162/ 28.5	•	40200.	54.0	.644
,		. DN	.AST10D30	_STELLAR ASTRONOMY (P)	LCR	30570	54.0/14.0	162/ 162/ 28.5	•	. 3057D.	54.0	
21	•	- DN	• • • • • • • • •	STELL AR ASTRONOMY (P)				162/ 162/ 28.5	- • • • • •'•	. 42702. . 31190.		
22								162/ 162/ 28.5. 162/ 162/ 28.5.	•	41492. 31890.	57.0.	
23	KSC	UP	.AST-11E7.	SOLAR PHYSICS (P)	LCR-R	31004	45.0/14.0.	210/ 210/ 28.5	•	31004.	45.0.	. 590
•	•	. DN	• AST-11E7.	SOLAR PHYSICS (P)	LCR .	29212	45.0/14.0.	210/ 210/ 28.5		· 29272.	45.0.	•

						1991	, , , , , , , , , , , , , , , , , , ,	The state of the s		Printer Comment	· · · · · · · · · · · · · · · · · · ·	er <u>e de la com</u> itiva es
FLT	LNCH			PJ	YLCAD	Carlotte St. Comp. 1	1 1 			SHUTTLE		
		TRIP	CODE	N AM E	TYPE	WEIGHT (LP)	L/O (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)	ENERGY Stage	VEIGHT. (LB)		
24			• • • • • • • • •		LCR-R	31004	.45.D/14.C.	210/ 210/ 28.5	•	31004	45.0	.590
	•	DN .	AST-11E7.	SOLAR PHYSICS (P)	LCR .	29272.	45.C/14.C	210/ 210/ 28.5	•	. 29272.	45.0.	
25	KSC	UP .	ASTIJE30.	SOLAR PHYSICS (P)	·LCR-R	41612	52.0/14.0	210/ 210/ 28.5	•	41612.	52.0.	.715
•	• •	DN .	ASTI1E30	SOLAR PHYSICS (P)	.LCR	32000	52.0/14.0	210/ 210/ 28.5	• • • • • • • • • • • • • • • • • • •	32000.	52.0.	•••••
26	KSC		.SP-1¢ .	HIGH ENERGY PHYSICS (P) SPACE PROCESSING (P) SPACE PROCESSING (P)	LCR-R.	5121.	30.0/14.C. 5.0/14.O. 5.0/14.O.	120/ 120/ 55-0		32748	40.0	.593
•		•	•SP-1C .	HIGH ENERGY PHYSICS (P) SPACE PROCESSING (P) SPACE PROCESSING (P)	.LCR .	4189	5.0/14.0.	120/ 120/ 55.0 120/ 120/ 55.0 120/ 120/ 55.0	•	28812.	40.0.	•••••
27	KSC	•	SP-1C .	HIGH ENERGY PHYSICS (P) SPACE PROCESSING (P) SPACE PROCESSING (P) SPACE MANUFACTURING (P)	·LCR-R.	5121. 5121.	5.0/14.C. 5.0/14.C.	120/ 120/ 28.5 120/ 120/ 28.5	•	37133.	42.0.	.569
•	•	•	SP-1C .		·LCR ·	4189. 4189.	5.0/14.0. 5.0/14.0.	120/ 120/ 28.5 120/ 120/ 28.5	•	31755	42.0.	•••••
28.	KSC .	UP •	PHY-6030_	HIGH ENERGY PHYSICS (P)	LCR-R.	39218.	45.0/14.0.	120/ 120/ 28.5	•	39218.	45.G.	. 592
•	:	DN .	PH Y-6030	HIGH ENERGY PHYSICS (P)	LCR .	30598.	45.0/14.0.	120/ 120/ 28.5.	· • • • • • • • • • • • • • • • • • • •	30598	45.C.	• • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

		· · · · · · · ·	·			1991	<u> </u>					
FLT				Р	AYLOAD				E NE RG Y	SHUTTLE	CARGO	SHUTTLE PERF
NO	SITE	TRIP	CODE	N AM E	• TYPE	.¥EĮGHT.		ORBIT HAZHPZ (NEIZNMIZDE		WEIGHT. (LB)		LOAD FACTOR
29	.KSC	UP	.PHY-7A	_ATHOS. SPACE PHY. (L+P)	•LCR-F	29002	60.0/14.0.	200/ 205/	28.5.	29302	60.0.	.555
	•		-PHY-7A	LATMOS. SPACE PHY. (L+P)	.LCR	28238	60.0/14.0.	200/ 200/	28.5.	28238	60.0	
- 30	.WTR	UP	PHY-7C	.ATMOS. SPACE PHY. (L+P)	• LCR-	29002	60.0/14.0.	180/ 180/	90.6.	. 39002	. 60.0	.868
	•	. BN	-PHY-7C	.ATHOS. SPACE PHY. (L+P)	LCR	28238	60.0/14.0.	180/ 180/	90.0.	. ?8238.	6 0. 0.	•
31	WTR	UP	-PHY-7C	ATHOS. SPACE PHY. (L+P)	LCR-F	29002	60.D/14.C.	180/ 180/	96.0.	29002	60.0.	.868
	•	• DN	-PHY-7C	ATMOS. SPAGE PHY. (L+P)	LCR	28238.	60.0/14.0.	180/ 180/	90.0.	28238	5 0. 0	· • • • • • • • • • • • • • • • • • • •
32	.KSC	up	LS-2A30	-LIFE SCIENCE (L)	.LCR-R	. 37532.	58.5/14.0.	150/ 150/	28.5.	37532	58.5.	-600
	•	DN .	-L5-2A30	LIFE SCIENCE (L)	.LCR	30185	58.5/14.0.	150/ 150/	28.5.	30185.	58.5	•
33	KSC	UP .	LS-2A3U	LIFE SCIENCE (L)	LCR-R	37532.	58.5/14.0.	150/ 150/	28.5.	37532	58.5.	.600
!	•	DN	-LS-2A30	_LIFE SCIENCE (L)	.LCR	30185	58.5/14.0.	150/ 150/	28.5.	30185.	58.5.	
34.	KSC	UP .	LS-2A30	LIFE SCIENCE (L)	LCR-R	37532	58.5/14.0.	150/ 150/ 3	28.5.	37532.	58.5	600
•		DN	LS-2430	LIFE SCIENCE (L')	-LCR	30185.	58.5/14.C.	150/ 150/ 2	28.5.	30185.	F8.5.	******
35.	KSC	UP .	ST-2A	-SPACE TECHNOLOGY (L+P)	LCR-R	25296.	60.0/14.6.	2007 2007 9	5.C.	25296	60.0	. 584
•		DN	ST-2A	SPACE TECHNOLOGY (L+P)	-LCR	24532.	60.0/14.0.	200/ 200/ 9	55.U.	24532.	60.0.	

						1991				<u> </u>		
FLT	LNCH	<u> </u>		p	AYLGAD		<u> Sangaran Sangaran</u>		5.5.5.6.4	SHUTTLE	CARGO	
NO	SITE	TRIP	CODE	N AM É	TYPE	⊈EIGHT (LB)	L/D (FT/FT)	ORBIT HAVHP/INC (NMI/NMI/DEG)	STAGE		LENGTH (F†)	PERF LOAD FACTOR
36	KSC	uP	.S1-28	SPACE TECHNOLOGY (L+P)	LCR-R	25296	60.0/14.0	200/ 200/ 55.0	•	25296	£0.0	.584
	•	DN	•ST-28	SPACE TECHNOLOGY (L+P)	LCR .	24532	60.0/14.0.	2007 2007 55.0	• • • • • • • • • • • • • • • • • • •	24532	6D.O.	•
37	KSC	UP	. S1-2C	-SPACE TECHNOLOGY (L+P)	•LCR-R.	25296	60.0/14.0	200/ 200/ 55.0	•	25296.	€0.0	. 58
,		DN .	•ST-2C •	SPACE TECHNOLOGY (L+P)	.LCR	24532	60.C/14.O.	200/ 200/ 55.0	• • • • • • • • • • • • • • • • • • •	24532	₽ 0. C.	•
38.	KSC	UP	• S T-2D	SPACE TECHNOLOGY (L+P)	·LCR-R	2529€.	.60.0/14.C.	200/ 200/ 55.0	•	• 25295.	60.0	. 58
		DN.	ST-20 •	-SPACE TECHNOLOGY (L+P)	LCR .	24532	6U.C/14.C.	200/ 200/ 55.0	• • • • • • • • • • • • • • • • • • •	24532	E D . O.	· · ·
39.	WTR .	UP .	•0A-1A	OFFICE OF APPLIC. (L+P)	LCR-R	. 27002.	ED.0/14.C.	160/ 160/ 50.0		27992	50.D.	80
•	•	DN .	0A-1A	OFFICE OF APPLIC. (L+P)	LCR	26136.	60.0/14.0.	160/ 160/ 90.0	•	26138	60.0	••••
	KSC .	UP .	0A-1B	OFFICE OF APPLIC. (L+P)	LCR-R	25402	60.D/14.C.	180/ 180/ 55.0		25402	60.0.	.56
•		DN	0A-18	*OFFICE OF APPLIC. (L+P)	LCR	24538.	80.0/14.0.	180/ 180/ 55.0.	•	24538	60.0	• • • • •
11.	KSC -	UP .	SP-1A	SPACE PROCESSING (L+P)	.LCR-R.	26084.	60.5/14.0.	180/ 180/ 28.5.		26084	::::::::::::::::::::::::::::::::::::	.49
•	•	DN .	SP-1A	-SPACE PROCESSING (L+P)	LCR .	. 25320,	60.0/14.0.	180/ 180/ 28.5.	•	25320	F0.0.	•••••
2	WTR .	UP .	NN/D-16A	EARTH OBSERVATION (L+P)	.LCR-R.	26502.	60.0/14.6	196/ 186/ 96.6		26502	60.0.	. 824
•	•	DN .	NN/D-16A	EARTH OBSERVATION (L+P)	.LCR	25639.	5C.C/14.G.	1807 1807 90.0	•	25638.	FD.D.	• • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1991				······································		
FLT	LNCH			PA	YLOAD				ENERGY			SHUTTLE
		TRIP	CODE	N AM E	TYPE	WEIGHT (LB)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)			LENGTH	
43	KSC	UP	• NN/D-16B • NN/D-15A	ASTRONOMY (P) SPACE MANUFACTURING (P)	LCR-R.	26798. 6171.	45.0/14.0. 5.0/14.0.	162/ 162/ 28.5 162/ 162/ 28.5	•	32969		.561
		•		.SPACE MANUFACTURING (P)		5239		162/ 162/ 28.5 162/ 162/ 28.5		30405	50.0.	
44.	KSC	• UP	• NN/D-16C	GPL 1 (L+P)	•LCR-R	26482	60.0/14.0	200/ 200/ 28.5	•	26482	60.0	.525
•	•		- NN/D-16C	•GPL 1 (L+P)	LCR	25718	60.0/14.C.	200/ 200/ 28.5	•	25718		
45	KSC	UP	• • NN/D-16D	_GPL 2 (L+P)	·LCR-R	26261	6D.D/14.b.	200/ 200/ 28.5	•	26261	60.0	522
•	•	DN	NN/D-16D	•GPL 2 (L+P)	LCR .		60.0/14.0.	200/ 200/ 28.5	=	25497.		
46		•	• NN/D-15B	SPACE MANUFACTURING (P) SPACE MANUFACTURING (P)		5121	5.0/14.0.	160/ 160/ 28.5	•	10242		
		DN	- NN/D-15B	_SPACE MANUFACTURING (P) _SPACE MANUFACTURING (P)		4184 4184	5.0/14.0.			8368		
47.	KSC	UP .	•	•	•		• •			61473.	35.0.	.978
•		אס	•	•	• •				•	0.	.8.	
48	KSC	UP .	PL-23	JUPITER SATE ORB./LAND.	LCE-N	35795.	48.3/14.7	ESCAPÉ	9-11	45829	56.8.	.729
		DN	· · · · · · · · · · · · · · · · · · ·		•				•	. 0.	G	

					1991						_
. N CH			P	AYLOAD	TABLE TA STA			ENED GY	SHUTTL	E CARGO	SHUTTLE
ITE	TRIP	CODE	NAME	TYPE	(<i>F3</i>) *EIGH1	L/D (FT/F1)	ORBIT FAVHPVINC (BEGNIMMI/DES)	STAGE			LOAD FACTOR
sc.	up .			•	•	•		•	•	•	•
					•			•	•	• • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • •
sc	UP.		•	•	• •			. TLG	•	•	•
				•	• • • • • •		,	.TUG	• • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • •
				•	• •		•	•	•	•	
				• • • •	• • • • • • • • • • • • • • • • • • • •		* * * * * * * * * * * * * * * * * * *	•	•	• • • • • • •	· • • • • • • • • • • • • • • • • • • •
sc .	UP .	•		4 4	• •	•			•		
•			******	•	• • • • • • •	•		.TLG	• • • • • • •	• • • • • • •	• • • • • • • • • • • • • • • • • • •
TR .	UP .	4		• •		•		•			•
•	DN .	•	*************	•		•	************	•	•		•
		•		•							•
	DN .	•	• • • • • • • • • • • • • • • • • • • •	•		•	• • • • • • • • • • • • • • • • • • • •				
TR .	UP .			• •	•			•			,
•	DN .	•	••••••••	•		•	****	•	•	•	•
	SC SC SC SC SC SC SC SC SC SC SC SC SC S	SC UP SC UP DN SC UP DN TR UP DN TR UP	TRE TRIP CODE SC UP DN SC UP DN TR UP DN TR UP DN TR UP DN TR UP DN	NCH TRIP CODE NAME SC UP	NCH TRIP CODE NAME TYPE SC . UP	NAME TRIP CODE NAME TYPE (EISH) (LS) SC UP DN SC UP DN TR UP DN TR UP DN TR UP DN TR UP DN TR UP DN TR UP DN	TRIP CODE	NAME	NAME	NAME	NAME

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

. <u></u>		V . L					1991	<u> </u>					
F: T	Ī	N CH		····	PA	DACLY		<u> </u>		ENERGY	SHUTTL	E CARGO	SHUTTLE PERF
NO	S	ITE,	TRIF	CODE	NAME	TYPE	WEIGHT	L/0 (FT/FT)	ORBIT HAZHPZINC (NMIZNMIZDEG)	STAGE	VEIGHT	LENGTH (FT)	LOAD FACTOR
56D	. ¥	TR .	UP	•	•	•	• •		•	.TUG	•	•	•
	•		DN .	•		•	•			TLG .		•	·
57 B	• K	sc .	. UP		•	•	•		•	.TUG	•	•	•
	•		DN		·	•	•			.TUG		•	•
	. K	s c	· UP	•	•	•	•		•	.TUG	•	•	•
	•	•	DN	•		•	•			.TUG		•	•
59D	. ₩	TR .		-		•	•		•	• •TU6	•	•	•
	•		DN	•	- 	•			,	TUG		• • • • • • • •	• • • • • • • • • • • • • • • • • • •
	•			•	•	•	• •		•	•	•	-	•
600		TR .	UP.	•	· •	:	•	•	• • •	. TUG	•	•	•
	•	•	DN	•	• • • • • • • • • • • • • • • • • • • •				• • • • • • • • • • • • • • • • • • • •	TUG			• • • • • • • • • •
6 1 D			· UP	•	•	•	•	- 	•	.TLG	•	- -	
	•		DN		- 	•				TLG		• • • • • • • • • • • • • • • • • • •	•

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

	;				C +x	1991			· · · · · · · · · · · · · · · · · · ·		<u> </u>	
FLT	LNCH				PAYLOAD				E NE RG Y	SHUTTL	E CARGO	SHUTTLE
ИО	SITE	YRIP	CODE	N AM E	TYPE	∉€IGHT (LB)	L/O (FT/FT)	ORBIT HAZHPZINC (NMIZNMIZDEG)	STAGE	WEIGHT (LB)	LENGTH	PERF LOAD Factor
6 2 D	KSC	uP.	4	•	•	•	,	•	TLG	•	•	
,	•	DN .			•	• •			.TLG	• • • • • • • • • • • • • • • • • • •	•	
630	KSC	UP .	•		•	• •			TUG	•		
		DN		, 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	•	•			.TUG	• • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • •	• • • • • • • • •
6 4 D	VTR .	UP.	•		•	• •			•	•	•	<u>.</u>
	•	DN .				• • • • • • • • •	•	* * * * * * * * * * * * * * * * * * *	· · · · · · · · · · · · · · · · · · ·	•	• • • • • •	• • • • • • • • • • • • • • • • • • •
6 50	VTR .	UP.	•		•		•			•		•
		DN .		· · · · · · · · · · · · · · · · · · ·	•	•	*******	· * * • • • • • • • • • • • • • • • • •	• • • • • • •	• • • • • • • • • • • • • • • • • • • •	• • • • • • •	· · · · · · · · · · · · · · · · · · ·
€ 6D.	WTR .	UP.	•		• (· a	•		•	•	•	•
	•	DN .	•	,	•	• • • • • • • • • • • • • • • • • • •	•		• • • • • • •	• • • • • • •		· • • • • • • • • • • • • • • • • • • •
6 7D.	WTR .	UP.	•			•	•		•			
•	•	DN .	• • • • • • • • • •	******************	• •		• • • • • • • • • • • • • • • • • • • •	. # * * * * * * * * * * * * * * * * * *	• • • • • •	• • • • • • •		
6 8D.		UP .	•		• •		•	·				<u>.</u>
•	•	DN .	•		• • • •	•	•	*********	•		•	• • • • • • •

TABLE 4. SHUTTLE CARGO MANIFEST (CON'T)

						1991						
FLT	LNCH			PAY	LOAD	A 100 C	· · · · · · · · · · · · · · · · · · ·		ENERGY	SHUTTL	E CARGO	SHUTTLE PERF
NO	SITE	TRIP	CODE	N AM E	TYPE	VEIGHT (LB)	L/D (FT/FT)	ORBIT HA/HP/INC (NMI/NMI/DEG)	STAGE	WEIGHT (LB)	LENGTH	LOAD FACTOR
69D.	¥TR	. UP	•	•			,	•	•	•	•	•
		. DN	•	•					•	•	•	• •
7 CD.	WTR	. UP	•	•	•			•	•	•	•	
	•	. DN	•	•	•	•			•	•	•	•
710.	WTR	· UP	•	•			•	•	•	•	•	•
•	•	DN.	•	* * * * * * * * * * * * * * * * * * *		•			•	• • • • • • • • • • • • • • • • • • •	•	,

EXPLANATION OF COLUMN HEADINGS FOR TABLE 5

FLIGHT NO. Flight number, a number used purely for reference and

does not indicate the launch sequence. A ''D'' following

the flight number indicates a DoD flight.

LAUNCH SITE Launch site; KSC, Kennedy Space Center; WTR, Western

Test Range.

LAUNCH VEHICLE Vehicle used to launch payload.

CODE Payload code.

NAME Payload name.

TYPE Payload type.

CDR - Current Design ReusableCDE - Current Design Expendable

LCR - Low Cost Reusable LCE - Low Cost Expendable

N - New payload

R - Refurbished payload

WEIGHT Payload launch weight in lb.

L/D Payload length and diameter in feet.

ORBIT HA/HP/INC Payload orbit:

HA — Apogee in n. mi.
HP — Perigee in n. mi.

INC - Inclination in degrees

CARGO WEIGHT Sum of all payload weights.

CARGO LENGTH Sum of lengths of all payloads.

EXPENDABLE LAUNCH VEHICLE NOMENCLATURE

Vehicle	Description
Scout	4-stage solid
Delta 300	3 Caster II augmentation motors on standard long tank Thor with standard second stage
Delta 600	6 Caster II augmentation motors on standard long tank Thor with standard second stage
Delta 900	9 Caster II augmentation motors on standard long tank Thor with standard second stage
Delta 904	Delta 900 with TE 364-4 motor third stage
TIIIB/A	2-stage standard Core I and II, with Agena added
TIIIB/C	TIIIB with Centaur added
TIIIC	Two 5-segment, 120-in. solids, standard Core I and II, transtage
TIIID	TIIIC with transtage removed
TIIID/C	TIIID with Centaur added
TIIID/BII	TIIID with Burner II added
TIIID/C/BII	TIIID/C with Burner II added
TIIID7	Two 7-segment, 120-in. solids, stretched Core I and standard Core II
TIIID7/C	TIIID7 with Centaur added
TIIID7/C/BII	TIIID7 with Centaur and Burner II added
TIIIB/C/BII	TIIIB with Centaur and Burner II added

TABLE 5. EXPENDABLE LAUNCH VEHICLES ASSIGNED DUE TO WTR AND SHUTTLE BUILDUP

	1	1		Year 19	80					
	}	1	ļ		Payload				C.	150 . •
Flight No.	Launch Site	Launch Vehicle	Code	Name	Туре	Weight (lb)	L/D · (ft/ft)	Orbit HA/HP/INC (n.mi./n.mi./deg)	Weight (lb)	Lengti (ft)
1	KSC	TIIIB/A	AST-1B	Explorer - Sync.	CDR	650	12.2/2.6	19 323/19 323/28.5	650	12.2
	!		NN/D-1	INTELSAT	CDR	4 498	12.2/9.0	19 323/19 323/0	5 555	
2	KSC	TIIID/C	NN/D-2A	U.S. DOMCOMSAT (Mission A)	LCE	1 057	11.1/7.6	19 323/19 323/0		23.3
			NN/D-1	INTELSAT	CDR	4 498	12.2/9.0	19 323/19 323/0		-
3	KSC	TIIID/C	NN/D-4	Traffic Management	LCE	1 422	12.5/10.3	19 323/19 323/0	5 920	24.7
			NN/D-1	INTELSAT	CDR	4 498	12.2/9.0	19 323/19 323/0		
4	KSC	THID/C	NN/D-4	Traffic Management	LCE	1 422	12.5/10.3	19 323/19 323/0	5 920	24.7
5	KSC	TIIIB/A	EO-5A	Special Purpose Satellite - Sync.	LCE	676	9.7/4.7	19 323/19 323/0	676	9.7
6	KSC	TIIIB/C/BII	PHY-1C	Explorer – High Altitude	LCE	1 226	10.4/6.1		1 226	10.4
7	KSC	TILIC	PL-10	Inner Planetary Follow-On	LCE	2 772	11.5/8.4		2 772	11.5
8	KSC	TIIID/C/BII	PL-17	Pioneer Saturn Probe	CDE	1 146	10.5/10.0		1 146	10.5
9	KSC	TIIID	ST-1	Long Duration Exposure Facility	CDR	10 200	35.5/14.0	270/270/28.5	10 200	35.5
10	KSC	Scout	ЕОР-6В	MINI LAGEOS – 55	CDE	225	1.6/1.6	350/350/55	225	1.6
1	KSC	Scout	EOP-6B	MINI LAGEOS – 55	CDE	225	1.6/1.6	350/350/55	225	1.6
2	WTR	Delta 300	EO-5B	Special Purpose Satellite - Polar	LCE	676	9.7/4.7	3000/300/90	676	9.7
						1				

TABLE 5. EXPENDABLE LAUNCH VEHICLES ASSIGNED DUE TO WTR AND SHUTTLE BUILDUP (Continued)

	· · · · · · · · · · · · · · · · · · ·			Year 1980 (Contin	ued)					
				Pay	load .				Co	
Flight No.	Launch Site	Launch Vehicle	Code	. Name	Туре	Weight (lb)	L/D · (ft/ft)	Orbit HA/HP/INC (n.mi./n.mi./deg)	Weight (lb)	Length (ft)
13	WTR	Delta 900	PHY-2A	Gravity/Relativity Satellite - Mission A	LCE	2 514	13.6/12.5	500/500/90	2 514	13.6
14	WTR	Delta 904	NN/D-8	Environmental Monitoring Satellite	LCR	2 025	12.4/10.2	920/920/103	2 025	12.4
15	WTR	TIIID	EOP-5	Gravity Gradiometer	LCE	10 236	30.2/14.7	108/108/90	10 236	30.2
16	WTR	THIB/C	NN/D-11	Earth Resources Satellite – LEO	LCR	8 630	36.0/10.2	500/500/97	8 630	36.0
17	WTR	Scout	EOP-6C	MINI LAGEOS – 90	CDE	225	1.6/1.6	350/350/90	225	1.6
18	WTR	Scout	EOP-6C	MINI LAGEOS – 90	CDE	225	1.6/1.6	350/350/90	225	1.6
19 _D	KSC									
20 _D	KSC									
21 _D	KSC									
²² D	KSC									
23 _D	WTR									
24 _D	WTR									<u> </u>

TABLE 5. EXPENDABLE LAUNCH VEHICLES ASSIGNED DUE TO WTR AND SHUTTLE BUILDUP (Continued)

				Year 1980 (Co	ntinued)					
	ļ				Payload			-	C	rgo
Flight No.	Launch Site	Launch Vehicle	Code	Name	Туре	Weight (lb)	L/D ·	Orbit HA/HP/INC (n.mi./n.mi./deg)	Weight (lb)	Length (ft)
25 _D	WTR									
26 _D	WTR									
27 _D	WTR									
28 _D	KSC									
29 _D	KSC ·									
30 _D	KSC									
³¹ D	KSC									
$^{32}\mathrm{D}$	KSC .									
³³ D	KSC									
. 34 _D	WTR					:				
³⁵ D	WTR									
36 _D	WTR									
³⁷ D	WTR									

TABLE 5. EXPENDABLE LAUNCH VEHICLES ASSIGNED DUE TO WTR AND SHUTTLE BUILDUP (Continued)

				Year 1980 (Concluded)					
				Payload	1		-		0	
Flight No.	Launch Site	Launch Vehicle	Code	Name	Туре	Weight (lb)	L/D · (ft/ft)	Orbit HA/HP/INC (n.mi./n.mi./deg)	Weight (lb)	Length (ft)
38 _D	WTR									
³⁹ D	WTR									
40 _D	WTR				<u> </u>					
41 _D	WTR									
						1				
ļ										
	!									
i		:							{	
			-						}	
		[<u>_</u>		i	<u> </u>				<u> </u>	

TABLE 5. EXPENDABLE LAUNCH VEHICLES ASSIGNED DUE TO WTR AND SHUTTLE BUILDUP (Continued)

	Launch Vehicle		Pa	yload				 	
		Ì						_	
	Verneie	Code	Name	Туре	Weight (lb)	L/D · (ft/ft)	Orbit HA/HP/INC (n.mi./n.mi./deg)	Weight (lb)	Length
SC 1	THD/C	PL-26	Comet Encke Rendezvous	LCE	4 978	19.9/14.7		4 978	19.9
SC T	TIIJD/C	PL-26	Comet Encke Rendezvous	LCE	4 978	19.9/14.7		4 978	19.9
TR D	Delta 600	PHY-1A	Explorer - Upper Atmosphere	CDR	1 588	13.3/4.0	1900/140/90	1 588	13.3
TR T	THIC	EO-3C	Earth Observation Satellite - Mission C	LCR	8 630	36.0/10.2	500/500/99	8 630	36.0
TR D	Delta 300	EO-5C	Special Purpose Satellite — Polar	LCE	676	9.7/4.7	280/280/90	-	<u> </u>
		EO-5C	Special Purpose Satellite — Polar	LCE	676	9.7/4.7	280/280/90	1 352	19.4
TR D	Delta 300	EOP-8	Vector Magnetometer Satellite	LCR	1 209	10.4/6.2	216/216/90		
		EOP-8	Vector Magnetometer Satellite	LCR	1 209	10.4/6.2	216/216/90	2418	20.8
FR D	Pelta 300	EOP-8	Vector Magnetometer Satellite	LCR	1 209	10.4/6.2	216/216/90	1 209	10.4
TR De	elta 904	NN/D-8	Environmental Monitoring Satellite	LCR	2 025	12.4/10.2	920/920/103	2 025	12.4
TR TI	IIIB/C	NN/D-11	Earth Resources Satellite - LEO	LCR	8 630	36.0/10.2	500/500/97	8 630	36.0
R									
С									
С	İ								
	ļ	ĺ							
	R I R I R I R I R I R I R I R I R I R I	PR Delta 600 PR THIC PR Delta 300 PR Delta 300 PR Delta 300 PR Delta 300 PR Delta 904 PR THIB/C PR THIB/C	Delta 600 PHY-1A R THIC EO-3C R Delta 300 EO-5C EO-5C R Delta 300 EOP-8 EOP-8 R Delta 300 EOP-8 R Delta 904 NN/D-8 R THIB/C NN/D-11 R	C TIIID/C PL-26 Comet Encke Rendezvous R Delta 600 PHY-1A Explorer - Upper Atmosphere R TIIIC EO-3C Earth Observation Satellite - Mission C R Delta 300 EO-5C Special Purpose Satellite - Polar EO-5C Special Purpose Satellite - Polar R Delta 300 EOP-8 Vector Magnetometer Satellite EOP-8 Vector Magnetometer Satellite R Delta 300 EOP-8 Vector Magnetometer Satellite R Delta 904 NN/D-8 Environmental Monitoring Satellite R TIIIB/C NN/D-11 Earth Resources Satellite - LEO	C TIIID/C PL-26 Comet Encke Rendezvous LCE R Delta 600 PHY-1A Explorer – Upper Atmosphere CDR R TIIIC EO-3C Earth Observation Satellite – Mission C LCR R Delta 300 EO-5C Special Purpose Satellite – Polar LCE EO-5C Special Purpose Satellite – Polar LCE R Delta 300 EOP-8 Vector Magnetometer Satellite LCR EOP-8 Vector Magnetometer Satellite LCR R Delta 300 EOP-8 Vector Magnetometer Satellite LCR R Delta 904 NN/D-8 Environmental Monitoring Satellite LCR R TIIIB/C NN/D-11 Earth Resources Satellite – LEO LCR	TIIID/C	TIIID/C PL-26 Comet Encke Rendezvous LCE 4 978 19.9/14.7	C	TIIID/C PL-26 Comet Encke Rendezvous LCE 4 978 19.9/14.7 4 978

TABLE 5. EXPENDABLE LAUNCH VEHICLES ASSIGNED DUE TO WTR AND SHUTTLE BUILDUP (Continued)

		•		Year 1981 (Concluded)						
				Payload					Co	rgo
Flight No.	Launch Site	Launch Vehicle	Code	Name	Туре	Weight (Ib)	L/D · (ft/ft)	Orbit HA/HP/INC (n.mi./n.mi./deg)	Weight (lb)	
13 _D	WTR									
14 _D	WTR									
15 _D	WTR									
16 _D	WTR									
17 _D	WTR									
18 _D	WTR									
19 _D	ŴΤR									
20 _D	WTR							1		
21 _D	WTR									
²² D	WTR									
				,						
		!				<u> </u> 			·	,
								•		

TABLE 5. EXPENDABLE LAUNCH VEHICLES ASSIGNED DUE TO WTR AND SHUTTLE BUILDUP (Continued)

				Year 198	2		•• • • • • • • • • • • • • • • • • • • •			
				Pa	yload		·		Con	
Flight No.	Launch Site	Launch Vehicle	Code	Name	Туре	Weight (lb)	L/D (ft/ft)	Orbit HA/HP/INC (n.mi./n.mi./deg)	Car Weight (lb)	Length (ft)
1	WTR	Delta 300	EO-5D	Special Purpose Satellite — Polar	LCE	676	9.7/4.7	400/400/90	676	9.7
2	WTR	Delta 900	EO-6	Tiros N-P	LCE	1 920	12.3/10.0	790/790/102	1 920	12.3
3	WTR	Delta 904	EOP-3	SEASAT B	LCE	. 3 030	18.3/14.7	325/325/90	3 030	18.3
4	WTR	TILIC	EOP-4	GEOPAUSE	CDE	2 231	10.0/6.5	16 200/16 200/90	2 231	10.0
5	WTR	Delta 904	NN/D-8	Environmental Monitoring Satellite	LCR	2 025	12.4/10.2	920/920/103	2 025	12.4
6	WTR	ТЦІВ/С	NN/D-11	Earth Resources Satellite - LEO	LCR	8 630	36.0/10.2	500/500/97	8 630	36.0
$^{7}\mathrm{D}$	WTR									
8 _D	ŴΤR					:				
9 _D	WTR									
$10_{ m D}$	WTR									
^{11}D	WTR									
¹² D	WTR									
13 _D	WTR									
14 _D	WTR							 		
										,
			l							

TABLE 5. EXPENDABLE LAUNCH VEHICLES ASSIGNED DUE TO WTR AND SHUTTLE BUILDUP (Concluded)

				Year 1982 (Conclude	ed)					
				Payload					Ca	īgo
Flight No.	Launch Site	Launch Vehicle	Code	Name	Type	Weight (lb)	L/D (ft/ft)	Orbit HA/HP/INC (n.mi./n.mi./deg)	Weight (lb)	Length (ft)
15 _D	WTR									
¹⁶ D	WTR			·						
17 _D	WTR									
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						!				
						-				
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L			[<u> </u>					

TABLE 6. SHUTTLE AND TUG TRAFFIC SUMMARY

							•	/EAR					
PROGRAM	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	TOTAL
NASA & NON-NASA	1		1]			
SHUTTLE FLIGHTS KSC WTR	14	32	27 1	34 7	35 10	42 9	42 10	37 8	39 9	33 11	42 11	39 9	416 85
TOTAL	14	32	28	41	45	51	52	. 45	48	44	53	48	501
TUG FLIGHTS KSC WTR		12	5	13	14 4	15 1	17 1	12 2	12 2	11 2	14 2	11 2	136 16
TOTAL		12	5	13	18	16	18	14	14	13	16	13	152
DOD													
SHUTTLE FLIGHTS KSC WTR		2	9	11 16	15 13	6 17	9 12	10 14	11 11	6 15	13 11	8 15	100 .124
TOTAL		2	9	27	28	23	21	24	22	21	24	23	224
TUG PLIGHTS KSC WTR		2	9	11 6	15 4	6 5	9 4	10 4	11 3	6 5	13	6 5	96 39
TOTAL		2	9	17	19	11	13	14	14	11	16	11	137
SUBTOTAL													-
SHUTTLE FLIGHTS TUG FLIGHTS	14	34 14	37 14	68 30	73 37	74 27	73 31	69 28	70 28	6 5 24	77 32	71 24	725 289
ABORT FLIGHTS	t 												
SHUTTLE TUG		2	3	5 3	6 4	6 2	6 3	6 2	6 2	5 2	6 3	6 2	57 25
TOTAL												•	•
SHUTTLE FLIGHTS TUG FLIGHTS	14	36 15	40 15	73 33	79 41	80 29	79 34	75 30	76 30	70 26	83 36	77 26	782 314

TABLE 7 EXPENDABLE LAUNCH VEHICLE TRAFFIC SUMMARY ASSIGNED DUE TO WTR AVAILABILITY & SHUTTLE BUILDUP RATE

	,	19	BO	198	31	198	32	TOTA	<u>L</u>
EXPENDABLE LAUNCH VEHICLES	LAUNCH SITE	NASA & NON-NASA	DOD	NASA & NON-NASA	DOD	NASA & NON-NASA	DOD	NASA & NON-NASA	DOD
SCOUT	KSC WTR	2 2						2 2	
DELTA 300	KSC WTR	· 1		3		1		5	
DELTA 600	KSC WTR	0		1		0		1	
DELTA 900	KSC WTR	1		0	·	1		2	
DELTA 904	KSC WTR	1		1		2		4	
TIIIB/C	KSC WTR	1		1		1		3	
TIIID7	KSC WTR	0		o		0		0	
TIIID/C/BII	K\$C WTR	1		0	:	0		7	
TIIIB/A	KSC WTR	2		0		0		2	
TIIIB/C/BII	KSC WTR								
TIIID	KSC WTR	1						1	
TIIID/BII	KSC WTR								
TUID/C	KSC WTR	3		2		0		5	
TIIID7/C	KSC WTR	o		0		0		0	
TIIID7/C/BII	KSC WTR	1		0		0		1	
TIHC	KSC WTR	1		1		1		1 2	
SUB-TOTAL/AGENCY	KSC WTR	11 7	10 13	2 7	2 11	0 6	0 11	13 20	12 35
SUB-TOTAL/YEAR ABORT FLIGHTS		41 4		22 2		17 2		8	10 8
TOTAL		45		24		19		8	18

TABLE 8. SPACELAB FLIGHT SUMMARY

			T				Year					<u> </u>	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	Total
NASA Spacelabs	•												
• Lab	2	2	2	2	2	2	2	2	3	3	3	3	28
• Pallet	2	4	6	7	8	11	10	9	9	9	8	9	92
• Lab and Pallet	5	8	8	8	10	10	11	10	11	10	11	10	112
	9	14	16	17	20	23	23	21	23	22	22	22	232
Foreign Spacelabs													
• Lab	0	0	0	0	0	0	0	0	0	0	0	0	
• Pallet	0	1	1	1	1	1	1	I	1	1	1	1	11
• Lab and Pallet	2	2	2	3	2	3	2	3	2	3	2	3	29
	2	3	3	4	3	4	3	4	3	4	3	4	40
Non-NASA-U.S. Domestic													
• Pallet				•					1	1	1	1	4
Total	11	17	19	21	23	27	26	25	27	27	26	27	276
Flight Sharing with Automated Payloads	0	4	5	10	7	8	9	5	7	6	6	6	73

TABLE 9. SORTIE MISSION MODEL

CODE	PAYLOAD	CONFIG.	· UP	DOWN	TOTAL	OR	BITAL				(LAUNG	H SCH	EDUL	E					80-91		
		CONTINU.	WEIGHT	WEIGHT	LENGTH	INCL.	ALT.	30	31	32	83	8-1	25	23	87	88	B9	90	91	EQUIV. FLTS.	TOTA	
AST 10a	STELLAR	PALLET	31 857	30 225	50	28.5	162	0	1	1	ï					T		Î		3	3	
10b	i	PALLET	28 526	25 894	45	28.5	162	1		1	1	İ				1	İ	l		2	2	
10c		PALLET	30 811	29 179	30	28.5	162			ĺ		1	1	1						2	2	
1047		PALLET	27 287	25 655	47	28.5	162	İ	i	1		1	1						ĺ	1	,	
1047	ļ	PALLET	27 287	25 655	47	90	120				ĺ		1	1						1	1	
10d30		PALLET	40 200	30 570	54	28.5	162	1	1					1	1	1			1	3	3	
10430		PALLET	40 200	30 570	54	90	120	ĺ	1		!			1			1	1		3	3	
10a		PALLET	25 460	23 828	40	28.5	162]		1	1		1	ļ	ļ			2	2	
107		PALLET	55 019	31 387	40 ·	28.5	162		ľ	1	Ì	1	1	1	1		1	1	1	2	2	
10g		PALLET	13 005	11 373	10	28.5	162		ŀ	}			н	н		ļ		1	İ	1	2	
10h		PALLET	41 512	32 000	52	28,5	162				Ι.	1		1	ļ	•		1		1 1	1	
10i		PALLET	29 168	19 538	54	28.5	162	ļ		ŀ	1		1	1			1			1	1	
10;		PALLET	23 519	21 837	45	28.5	162					ļ			1			1		2	2	
10k7		PALLET	29 637	28 005	48	28.5	162	1				i	1	i	1	Į	1	1		1	1	
10k30		PALLET	42 702	31 190	55	28.5	162					ĺ		ļ		1	1	1	1	4	4	
101		PALLET	41 402	31 890	57	28.5	162			İ			!			1			1	2	2	
10m		PALLET	40 146	30 634	37	`5 5	162		Ì							1	1			2	2	
	-				•			D	1	2	2	3	4%	4%	3	4	3	3	3	33	34	
AST 11a	SOLAR	PALLET	21 055	19 323	25	28.5	210	1	1					 						2	2	
116	PHYSICS	PALLET	24 771	23 009	50	28.5	210			1	2	2	1	1	1			ł	٠.	8	8	
11c7		PALLET	30 298	28 566	40	28.5	210-				j		2		1]	2	2	
11c30		PALLET	41 363	31 751	47	28.5	210				Ì	l		1	l				1	,	Ť	
11d7		PALLET	23 871	22 139	25	28.5	210				ļ	[ļ	1			İ	Į .	,	1	
11630		PALLET	36 784	27 054	32	28,5	210				ĺ			1	1					,	1	
1107		PALLET	31 004	29 272	45	28.5	210					1			ļ	1	2	1	2	6	6	
11e30		PALLET	41 612	35 000	52	28.5	210									1	1	1	1	4	4	
			31 227	28 242	5 5			1	1	1	2	2	3	2	3	2	3	2	3	25	25	
PHY 6a	HIGH	PALLET	15 936	13 864	30	28.5	120 6	н		н	н	н	н							2.5	5	
6 b	ENERGY	PALLET	20 898	18 316	25	28.5	120	н	į l	н	н	н	н]				ĺ		2.5		
6 c		PALLET	22 506	20 434	30	5 5	120		н	н	н	н	н	н	н	н	н	н	н	5.5	11	
6d		PALLET	20 720	18 138	27	28.5	120		н	н	н	н	н	н	н	н	н	н	н	5.5	11	
6 e30		PALLET	39 218	30 598	45	28.5	120							1	1	1	1	1	1	6	8	
					,			1	1	2	2	2	2	2	2	2	2	2	2	22	33	
7HY 7a	ATMOS.	L+P	29 002	28 238	60	29.5	200	0	,	1	0	٥	1	1	0	1	,	,	1			
7b	SPACE	L + P	29 002	28 232	60	55	200	0	0	0	0	1	0	1	1	1	0	1	0	5	5	
7¢	PHYSICS	L+P	29 002	28 238	60	90	180	0	0	0	1	2	2	2	2	2	2	2	2	17	17	
								0	1	1	1	3	3	4	3	4	3	4	3	30	30	
					TOTAL			2	5	7	8	11	14	14	12	13	12	12	12	-	122	
					EQUIV. FL	TS.		2	4	6	7	10	12%	12%	11	12	11	11	11	110	 	

NOTE: L + P = LAB PLUS PALLET
H = HALF PALLET

TABLE 9. SORTIE MISSION MODEL (Concluded)

CODE	PAYLOAD	CONFIG.	UP	DOWN	TOTAL		BITAL	LAUNCH SCHEDULE 80-91												-91	
	LIFE	 	WEIGHT	WEIGHT	LENGTH	INCL.	ALT.	60	B1	82	83	84	85	86	87	88	89	90	91	EQUIV. FLTS.	TOTA
LS 2a7 2a30	SCIENCE	LAB	37 532	39 185 70 105	58.5	28.5	150	2	2	2				i						6	6
	SCIENCE	LAS	37 532	30 185	58,5	28.5	150		<u>L</u>		2	2	2	2	2	3	3	3	3	22	22
	<u> </u>							2	3	2	2	2	2	2	2	3	3	3	3	28	28
ST 2s	SPACE	L+P	25 296	24 532	60	55	200	1	1	1	,	,	1	,	1	,	,	,	,	12	12
26	TECH.	L+P	25 296	24 532	60	55	200	1	1	1	1	1	1	1	1	1	1	1	1	12	12
2 = .	İ	L+P	25 296	24 532	60	55	200	1	1	1	1	1	1	1	1	1	1	1	1 1	11	11
2d 		L+P	25 296	24 532	60	\$5	290		1	;	1	1	1	1	1	1	1	1	1	13	11
	ļ	<u> </u>						2	4	4	4	4 .	4	4	4	- 4	4	4	4	46	46
0A 1a	OFFICE	L+P	27 002	26 138	60	55	180	,	1	1	1		1		1			1		7	,
14	OF	L+P	27 002	26 138	80	90	160		l		ļ	1	1	1		1	1		1	5	5
1b	APPLIC.	L+P L+P	25 402	24 538	60	55	180	1	ו	1	1	1	1	1		1	}		١	8	8
16			25 402	24 53B	60	90	160						1		1		١ ،	1		4	4
SP 1a	SPACE	L+P	26 084	25 320	60	28.5	180	,	1	,	1	١,	1	١,	١,,	1	1	١,	1	12	12
1b	PROCESS	PALLET	6 171	5 239	5	ANY	ANY		2	6	6	6	6	6	6	8	1 6	6	6	15%	62
1c		PALLET	5 121	4 189	5	ANY	ANY		2	6	6	6	6	6	6	6	6	6	6	15%	62
								3	4	6	6	6	6	6	6	6	6	6	6	67	160
	NON/NASA NON/DOD SPACE																		7		
NN D15a	MFG.	PALLET	6 171	5 239	5	ANY	ANY	İ					2	4	2	4	2	4	2	. 5	20
D156		PALLET	5 121	4 184	5	ANY	ANY						2	4	2	4	2	4	2	5	20
	FOREIGN																-	 -			
NN D16a73	E. O.	L+P	26 502	25 638	50	28.5	180	١ ا		1										3	3
D16a79	€.0.	L+P	26 502	25 63B	60,∠	90	180	1				1		1		1		1		9	9
D16b	ASTM	PALLET	26 798	25 166	45	28.5	162		1	1	1	1	1	1	1	1	1.	1	1	11	11
D16c D16d	GPL 1 GPL 2	L+P	26 482	25 718	60	28.5	200	1	1	1	1	1	1	1	1	1	1	1	1	12	12
	GFL 2	L+P	26 261	25 497	60	28.5	200	<u> </u>		_	1		1		1		1		1	5	5
								2	3	3	4	3	5	5	5	5	-5	5	5	50	80
				TOTAL SHE				2	5	7	8	11	14	14	12	13	12	12	12	-	122
				TOTAL SHE	ET #2			9	16	24	25	24	29	32	29	33	30	33	30	-	314
						TOTAL		11	21	31	33	35	43	46	41	46	42	45	42	<u> </u>	436
					S. SHEET =			2	4	6	7	10	12%	12%	11	12	11	11	11	110	-
				EQUIV. FL1	S. SHEET #			9	13	15	16	15	17	17	17	18	18	18	18	191	
						TOTAL		11	17	21	23	25	29%	29:4	28	30	29	29	29	301	-

NOTE: L + P - LAB PLUS PALLET



APPENDIX

TRANSPORTATION SECTION

Space Shuttle System Description and General Capabilities

This section describes the Space Shuttle system as it relates to pay-loads.

The Shuttle flight system is composed of the Orbiter, an external tank containing the ascent propellants to be used by the Orbiter main engines, and two solid rocket boosters (SRB's). The Shuttle flight system is shown in Figure A-1.

The SRB's and the Orbiter main engines fire in parallel, providing thrust for lift-off. The Orbiter main engines continue firing until the vehicle reaches the desired suborbital conditions, where the external tank is jettisoned. The orbital maneuvering subsystem (OMS) is immediately fired to place the Orbiter into the desired final orbit. The Orbiter delivers and retrieves payloads, conducts orbital operations, and returns to a land base in a manner similar to that of high-performance aircraft.

The Orbiter shown in Figure A-1 is a reusable vehicle designed to operate in orbit for missions of up to 7-day duration. However, the Orbiter is being designed so as not to preclude missions of durations up to 30 days from being accomplished. The crew and other personnel will be accommodated in a shirt-sleeve environment in a two-level pressurized cabin with an airlock that provides access to the payload bay and permits extravehicular activity (EVA). The cabin is being designed for a basic crew of four with expendables provisioning for 28 man-days.

The Orbiter crew consists of the commander and pilot. Additional crewmen required to conduct Orbiter/payload operations are a mission specialist and a payload specialist.

BASELINE PERFORMANCE

The Space Shuttle system provides a general capability for the transportation of a wide variety of payloads to and from low earth orbit altitudes

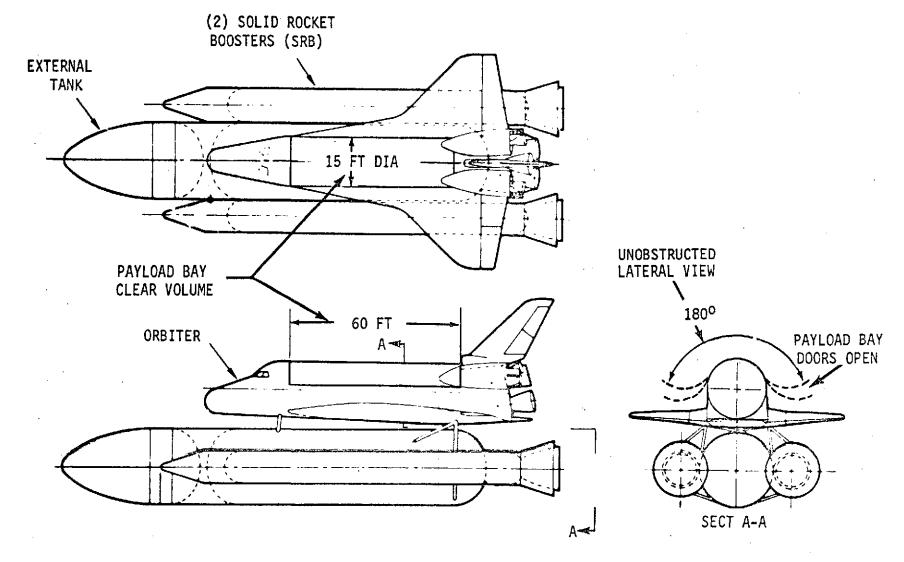


Figure A-1. Space Shuttle flight system.

at various inclinations. To accomplish this goal, reference missions have been selected for design purposes that are representative of the wide spectrum of anticipated missions.

The launch technique uses a suborbital external tank separation. For missions launched from the Kennedy Space Center (KSC), the main engine cutoff (MECO) occurs on a suborbital trajectory targeted so that the external tank will impact in the Indian Ocean. Immediately after MECO the Orbiter separates, and the OMS is used to place the Orbiter into the desired final orbit. The OMS ΔV required for the launch phase, that is to raise the Orbiter from the MECO conditions to a 50 by 100 nautical mile (or its equivalent) orbit, is 155 fps for a KSC launch. Missions launched from Vandenberg Air Force Base (VAFB) into a similar suborbital trajectory are targeted for impacting the tank into the Pacific Ocean. OMS ΔV required for the launch phase for launches from VAFB is 350 fps for equivalent orbital conditions.

On-orbit translational ΔV is provided by the OMS and the reaction control subsystem (RCS). The OMS provides the propulsive thrust to perform orbit circularization, orbit transfer, rendezvous, and deorbit maneuvers. The RCS provides the propulsive thrust for three-axis angular control and three-axis translation of the Orbiter. The Orbiter will have the capability to use either the parking orbit technique or the direct ascent technique for rendezvous. In using the parking orbit technique, all orbit transfer maneuvers required to establish a terminal approach to the target will be executed using the OMS. In using the direct ascent technique, the Orbiter is launched into an intercept trajectory at the same inclination as the target. In using either technique, any trajectory corrections and braking maneuvers will be executed with the RCS.

PERFORMANCE CAPABILITIES

The performance capabilities of the Space Shuttle system are dependent upon the operational requirements established for each mission. The type of rendezvous technique, the payload pointing requirements, the operational constraints, the length of mission, the orbit transfer requirements, etc., determine the performance capability for any particular mission. The performance curves contained in this section represent the capabilities of the Space Shuttle system for typical sets of operational requirements. Certain items of equipment, consumables, etc., that are mission unique must be considered as part of the total payload, and in planning for a particular mission must be included as part of the payload weight. In addition, the OMS

and RCS are loaded to meet the specific on-orbit maneuver requirements and are not necessarily loaded to the total loading capacity.

The Orbiter integral OMS tankage has been sized to provide 1000 fps ΔV capability to the Orbiter with a 65 000-pound payload. Up to three extra OMS kits can be installed for increased operational flexibility. Each kit contains one-half as much usable propellant as the integral OMS tankage, resulting in a total propellant capacity two and one-half times that of the integral tankage.

PAYLOAD CHARGEABLE WEIGHT

The payload chargeable weight is the weight of additional personnel in excess of a crew of four, OMS kits, a docking module, additional consumables, and payload support equipment which are added to the basic Orbiter for a particular mission in excess of the basic Orbiter capability. Many of these items are available in the Space Shuttle hardware inventory, but must be listed separately in the Orbiter weight summary for the purpose of weight accounting.

LAUNCH AZIMUTHS AND INCLINATIONS

The operational azimuths from the two planned launch sites and the orbital inclinations obtainable are shown in Figure A-2.

CIRCULAR ORBITAL ALTITUDE PERFORMANCE

Figures A-3 and A-4 show payload delivery capability as a function of circular orbital altitude at various inclinations. Figure A-3 is for missions launched from KSC and Figure A-4 is for missions launched from VAFB. Separate plots are needed because of the different MECO conditions required for the two different launch sites.

Refer to JSC 07700, Volume XIV, Revision A, Space Shuttle Systems Payload Accommodations — Level II Program Definition and Requirements, for additional details concerning the Shuttle.

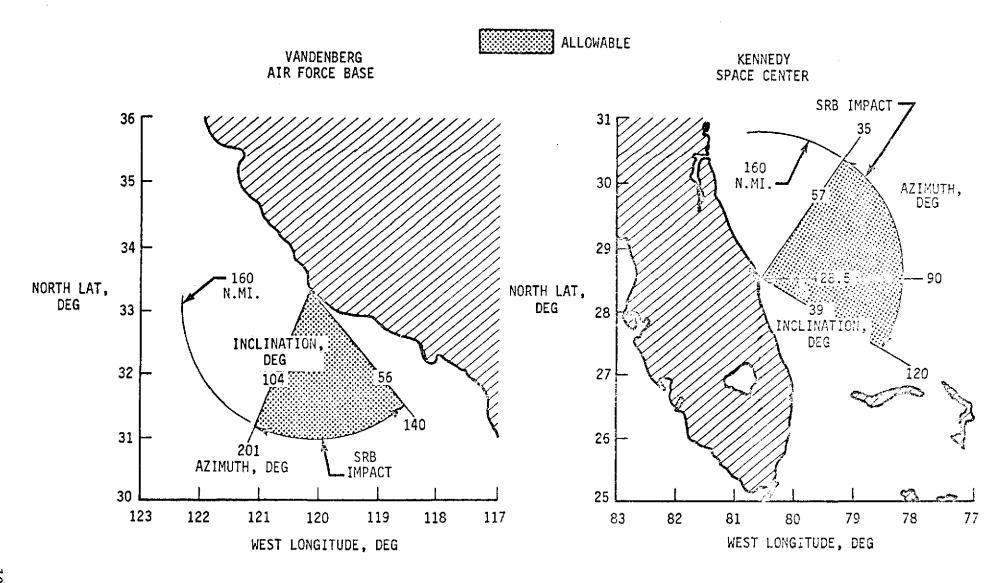


Figure A-2. Launch azimuth and inclination limits from VAFB and KSC.

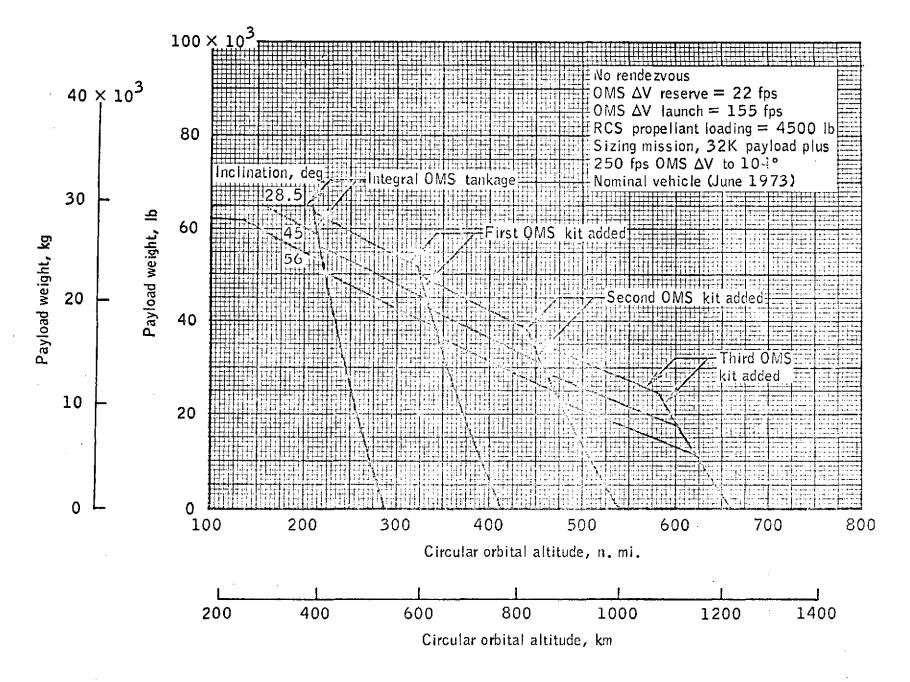


Figure A-3. Payload weight versus circular orbital altitude - KSC launch, delivery only.

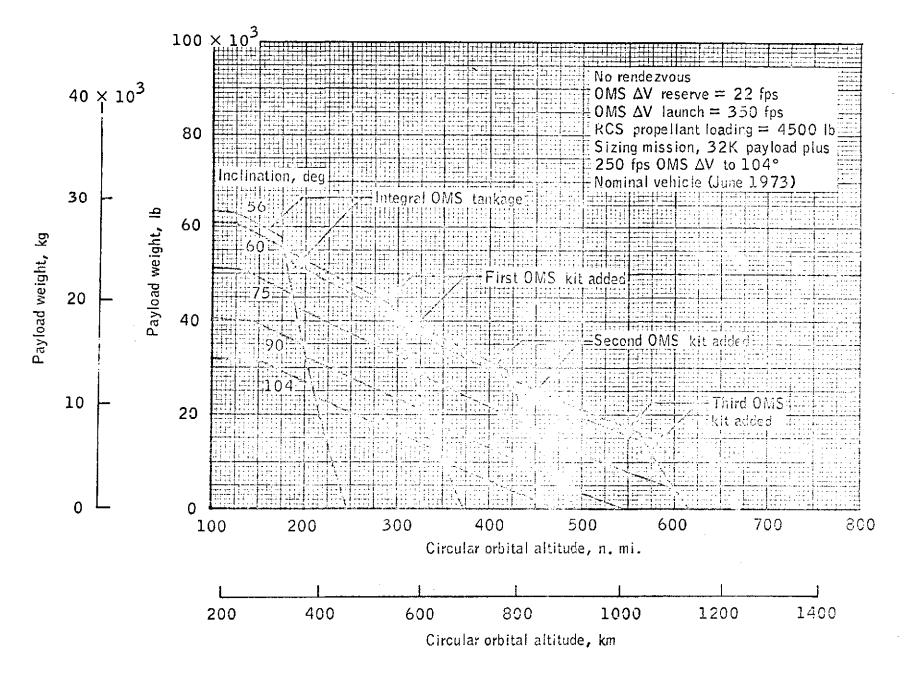


Figure A-4. Payload weight versus circular orbital altitude - VAFB launch, delivery only.

Space Tug System Description and General Capabilities

Both Tugs used in this analysis are Cryogenic Tugs. The Interim Tug with an assumed availability of late 1980 is designed using current technology. This Tug is capable of being reused but does not have payload retrieval capability. This Tug uses an RL10, Category I engine with a specific impulse of 444 sec.

The Interim Tug will be replaced in late 1983 with an upgraded Tug, which will have improved performance and payload retrieval capability. The RL10 will be replaced with an RL10, Category II engine with a specific impulse of 461 seconds. Rendezvous and docking avionics are added to allow the stage to retrieve payloads.

Table A-1 lists the characteristics of both the Interim and Full Performance Tugs. Figure A-5 is a typical configuration of the LOX/LH₂ Tugs. Both stages have the same dimensions. The performance numbers are based on the Tug leaving a 28.5-degree inclination, 160 n. mi. circular orbit and placing a payload in an equatorial synchronous orbit.

Kick Stage System Description and General Capabilities

A Growth Burner II with 9000 pounds of propellant was used as the kick stage in this analysis to reduce the number of Tugs that would have to be expended. Only one size kick stage, which was optimized for the planetary missions, was used throughout the Payload Model. Table A-2 lists the characteristics of the kick stage, and Figure A-6 is a typical solid motor kick stage configuration.

TABLE A-1. TUG CONFIGURATION DATA

	Interim	Full Performance				
IOC Date	Dec. 1980	Dec. 1983				
Type Propellant	LOX/LH ₂	LOX/LH ₂				
Retrieval Capability	No	Yes				
Length	34.8 feet	34.8 feet				
Diameter	14.6 feet	14.6 feet				
Dry Weight	5245 pounds	5257 pounds				
Contingency	525 p o unds	526 pounds				
Residuals	864 pounds	864 pounds				
Burnout Weight	6284 pounds	6297 pounds				
Max. Main Prop.	55 700 pounds	55 700 pounds				
Max. ACS Prop.	727 p o unds	217 pounds				
In-Flight Losses	961 pounds	518 pounds				
Main Engine Thrust	15 000 pounds	15 000 p o unds				
Main Engine Isp	444 seconds	461.6 seconds				
RCS Isp Steady State	231 seconds	231 seconds				
RCS I Pulsing	220 seconds	220 seconds				
$\operatorname{fPR}(\%\Delta V)$	2 percent	2 percent				
Performance						
Deploy Retrieve	5033 pounds	7091 pounds				
Retrieve Round Trip	NA NA	4250 pounds 2750 pounds				
Shuttle-Tug Adapter	2150 pounds	2150 pounds				

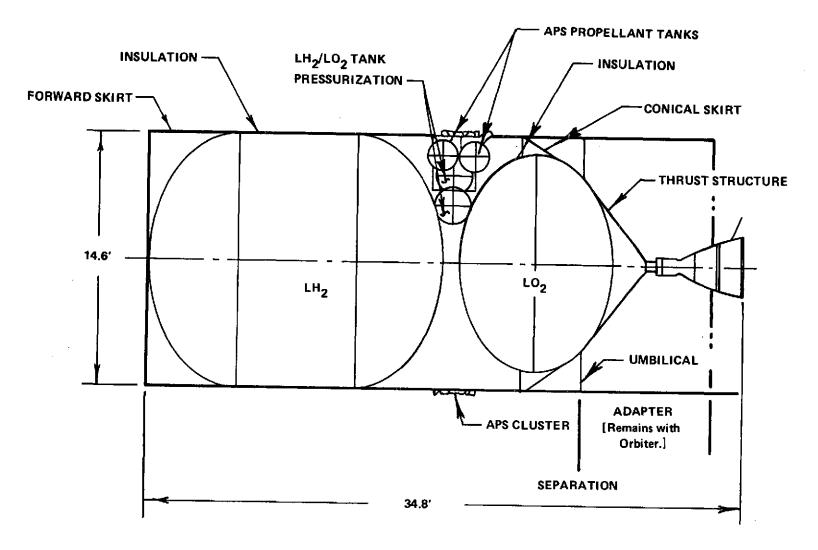


Figure A-5. Initial cryogenic Tug.

TABLE A-2. GROWTH BURNER II CHARACTERISTICS

Length	8.5 feet
Diameter	82 inches
Burnout Weight	1034 pounds
Main Propellant	9000 pounds
I sp	284 seconds

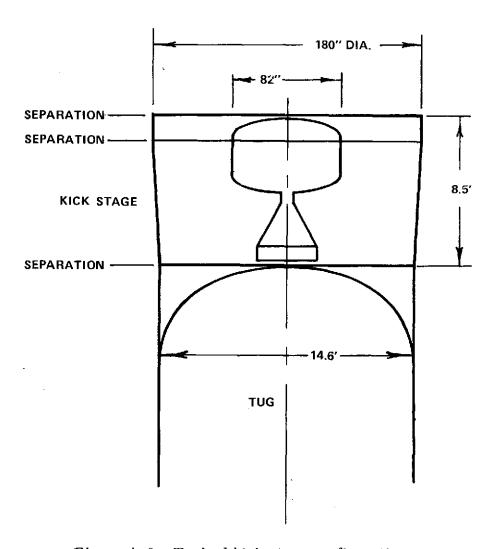


Figure A-6. Typical kick stage configuration.

APPROVAL

THE OCTOBER 1973 SPACE SHUTTLE TRAFFIC MODEL

By Shuttle Utilization Planning Office

The information in this report has been reviewed for security classification. Review of any information concerning Department of Defense or Atomic Energy Commission programs has been made by the MSFC Security Classification Officer. This report, in its entirety, has been determined to be unclassified.

This document has also been reviewed and approved for technical accuracy.

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